ISTRUZIONI PER L'INSTALLAZIONE E LA MANUTENZIONE
INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE
INSTRUCCIONES PARA LA INSTALACION Y EL MANTENIMIENTO
MONTAGE - UND WARTUNGSANLEITUNG

FEKAFOS MAXI 1200-3600



DAB
WATER•TECHNOLOGY

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1. SAFETY PRECAUTIONS.

1.1 

Before installation, carefully read this documentation and that supplied with the pump manual and the control panel.
It is indispensable to have the electric and hydraulic connections made by skilled personnel, in possession of the technical qualifications indicated by the safety standards concerning the design, installation and maintenance of technical plants, in force in the country where the product is to be installed.
Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

1.2 

The term **skilled personnel** means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers. (Definition for technical personnel IEC 364).
The appliance is not intendend for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsable for their safety. Children should be supervised to ensure that they do not play with the appliance

1.3 

Check that the system has suffered no damage during transport or storage. In particular, ensure that the external casing is perfectly entire and in excellent condition; check the efficiency of all the tank components; replace any parts that are not perfectly efficient.

FEKAFOS MAXI lifting tanks are specially designed for use outside buildings and for underground use.



For details of burying methods, refer to part 3 **HANDLING AND INSTALLATION PROCEDURES** below.
In all cases, before starting the system the following instructions must be complied with:

2. USE AND MAINTENANCE

2.1 GENERAL INFORMATION

DAB PUMPS systems are manufactured in polyethylene by rotational moulding and comply with the domestic and European standards with regard to the CE marking of products relevant to the specific operating modes.

RULES FOR EFFECTIVE SYSTEM OPERATION
- Selection of correct size
- Installation in accordance with good practice
- Regular scheduled maintenance

ARE THE BASIS FOR
- Minimising environmental pollutant emissions
- Reducing unplanned maintenance frequencies
- Increasing the system's working lifetime
- Complying with regulatory and authorisation requirements

In this manual, DAB PUMPS provides the basic instructions for correct management and installation of the system.

This operator's manual is for use with the following types of systems:

UNIT AND SYSTEM TYPES

FEKAFOS MAXI 1200-3600

USES
CLEAR WATER LIFTING
WASTEWATER LIFTING
UNSTRAINED SEWAGE LIFTING

2.2 FUNCTION AND USE

Water lifting systems are used for pumping water to a site at a higher level.
Often, the need to construct basements both in residential buildings and in public construction projects (car parks etc.), and underground infrastructures, leads to the requirement for automatic systems for transferring rainwater or wastewater to drainage systems or watercourses which flow at a level above that of the basement floors.
The tank is suitable to satisfy the standards 752:2008 and 12056-4 if complete with adequate accessories (pumps and valves).

CLEAR WATER LIFTING SYSTEMS
They are generally used for lifting or draining rainwater or wastewater, for liquids which do not contain solids. However, when run-off rain water is to be lifted the units installed are generally suitable for pumping water containing small solids.

WASTEWATER LIFTING SYSTEMS
This the most widely used type of system, especially in non-industrial applications. Systems of this kind are able to transfer liquids which may contain a certain amount of small solid bodies.
Depending on the size of the solids in the liquid to be lifted, which must however be small, at least a preliminary coarse strainer or a settling tank must be installed upstream of the system.
Pumps with set-back impeller (never in contact with the liquid) or with channel impeller with large free passage are normally used for these systems.

UNSTRAINED SEWAGE LIFTING SYSTEMS
They are used for transferring water that contains solids. Mainly, they are installed when pressurised sewer systems have to be constructed with small diameter pipelines with irregular altimetric profile, and a particularly high gradient has to be overcome.
These systems incorporate pumps with knife grinder systems, which chop up the solids and are therefore always in contact with the liquid to be lifted. In constant duty conditions, wear of the grinder knives means that constant, continual maintenance is required to maintain rated performance levels.

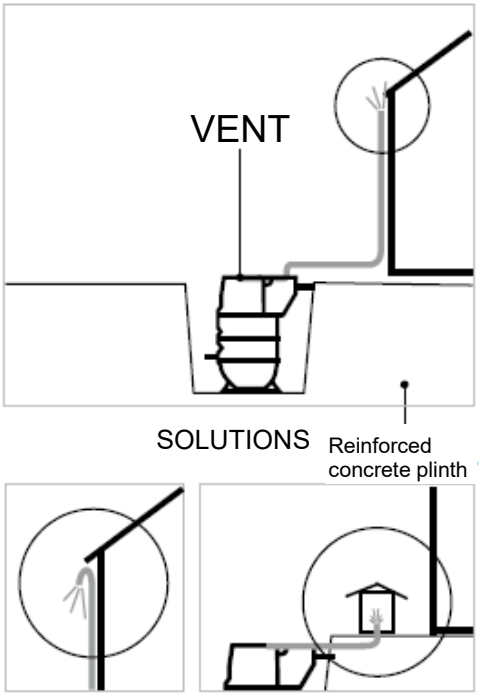
2.2.1 Operating mode

When the liquid in the tank reaches the level at which the electric pump control float switch contact is closed, the pump starts, gradually emptying the tank. The pump stops when the liquid reaches the minimum level at which the float switch contact is opened. When two electric pumps are installed, the second pump starts after the first and only if the latter is unable to transfer all the liquid arriving from the various inlets to the sewer. An additional float switch may be installed higher up than the others in the pumping station, to signal an excessively high level of liquid in the tank.

2.3 CONNECTIONS

2.3.1 Vent connection

Tank vents should always be connected to a ventilation pipe, if available.
If the location does not have a ventilation pipe, a PVC pipe must be connected to the system's safety vent, with the outlet end at a level above the maximum level of the liquid in the tank.
Various national regulations may require different ratios between the outlet and vent pipe diameters.
This pipe must always be fitted with an anti-fouling device (protective grille) and must be inspected periodically to guard against blockages.



2.3.2 Check valve

Install a check valve on the pipeline connecting to the public/private sewer system. This prevents the flowback of liquids. Install the valve at least 1 metre from the lifting station to enable the flow of liquid delivered by the pump to open the valve shutter (unless otherwise recommended by the manufacturer). Always refer to the relevant local and/or national regulations, laws and standards.
Check valves are available as accessory kits.

2.3.3 Gate stop valve

Install a stop valve both on the inlet pipeline and on the delivery line (connecting to the public/private sewer system). This allows maintenance work to be done without having to empty the entire system. Gate valves or ball valves can be used.
Stop valves are available as accessory kits.

2.4 ELECTRICAL CONNECTIONS AND FLOAT SWITCH ADJUSTMENT



Make sure that the gradient between the pump and the sewer system is compatible with the pump's rated performance.

2.4.1 Choosing the electrical control panel



Check that the electrical data of the panel and pump are compatible.
An incorrect combination may cause malfunctions and not provide the motor with the necessary protection.



Always refer to the pump manual and the instructions supplied with the electrical panel

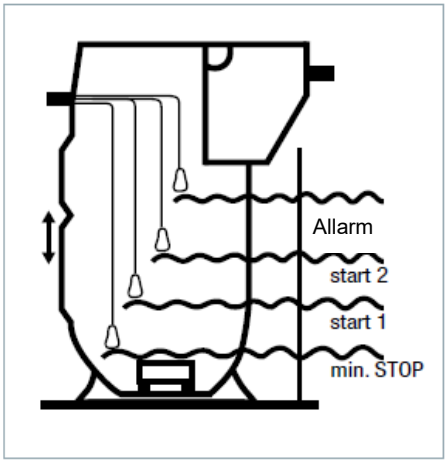


The electrical connection must be made in accordance with the relevant local safety standards and only by qualified staff.

Always refer to the relevant local and/or national regulations, laws and standards.
We recommend you to contact the Dab After-Sales Service to put the system into service.

The system must be connected only by means of the ED and E-BOX panels recommended by the constructor, supplied complete with detailed instructions for electrical connections and use:

2.4.2 Float switches

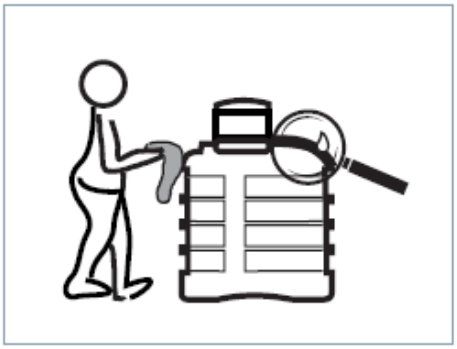


Float switches are fitted at standard heights in the factory.
Check that these heights are correct to ensure trouble-free operation and if necessary reposition the float switches as appropriate to their functions (minimum level switch, alarm, etc.).
The various functions of the entire system, which depend on the tank water level, must be checked just once, by filling the tank with water to the corresponding levels.

2.5 FIRST START-UP



Before starting the system, read this documentation and that contained in the pump manual with care.
The system must be checked and put into service by qualified staff who meet the technical requirements specified in the safety regulations concerning the design, installation and maintenance of technical systems in the country where the product is installed.





Always refer to the pump manual and the instructions supplied with the electrical panel



Before starting the electric pump, check that the tank system and pipelines are free from residues or other material which may prevent the system from operating correctly.

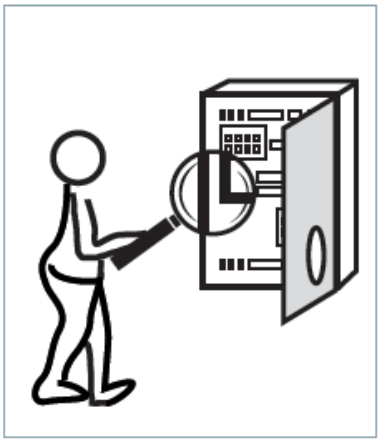


Before the pump is put into operation, the tank must be filled with the liquid to be pumped at least up to a depth level with the top of the pump motor.
The pump must never suck in air!



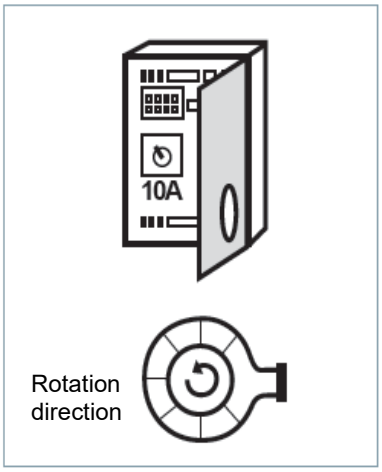
The flow of liquid from the various users must not interfere with correct operation of the float switches in the tank.

In this phase, you may leave the cut-off valve on the inlet line shut and fill the lifting station with clean water.



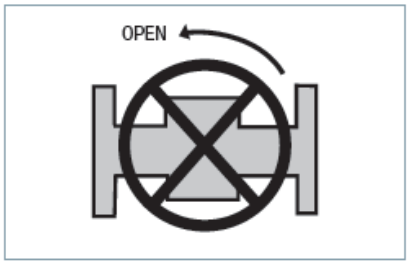
- Check that the system's rated voltage is the same as the control panel power supply voltage.
- Check that a safety circuit breaker with suitable thermal protection is installed upstream of the pump control panel supplied with the system.
- Check that the current overload switch of each pump (thermal protector) on the control panel supplied with the system is properly set. The pump thermal protector switch is not set in the factory so it must be set in strict accordance with the procedure specified in the electrical panel instruction manual provided.
- For three-phase electric pumps, check that the impeller turns in the correct direction.

  Also refer to the electric pump manual.
- Check that the float switch tripping levels are correct and modify them if necessary to meet the system's actual requirements.
- When two electric pumps are installed, the float switches must be set so that the second pump starts after the first and only if the latter is unable to transfer all the liquid arriving from the various inlets to the sewer.
- Check that the pump cannot be deprimed during operation.
- Check that the number of starts per hour is compatible with the characteristics of the system components.



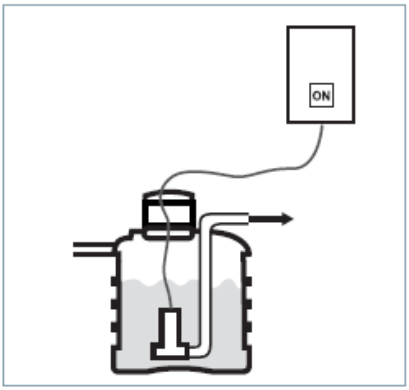
Open the cut-off valve on the delivery pipeline and check that the pipeline connections are firm and perfectly watertight, and that the electric pump is operating correctly. Also check that the electric pump is primed.
Open the cut-off valve on the inlet pipeline and check that the station is operating correctly.

Check that the system is operating correctly and put it into service. Close the station's cover/s, screwing it or them into place.

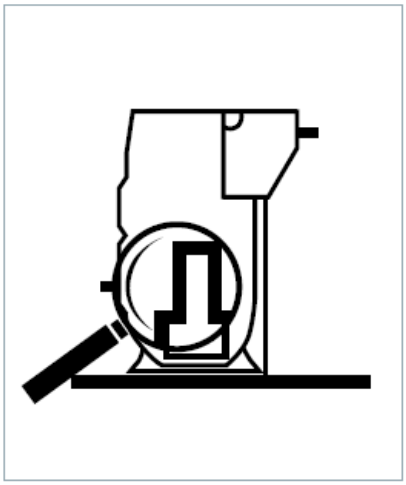


Starting

After completion of the correct assembly of the entire system and all additional components, with performance of the specified preliminary checks and also ensuring that the pipeline and electrical connections have been made without problems, the system can be put into operation.



2.6 MAINTENANCE



The operator must check the system's operation and inspect it for leaks at least monthly, by observing a whole switching cycle.

During all maintenance procedures, disconnect the system from the electricity supply and comply with the safety instructions!

All maintenance procedures must be performed regularly by authorised engineers.

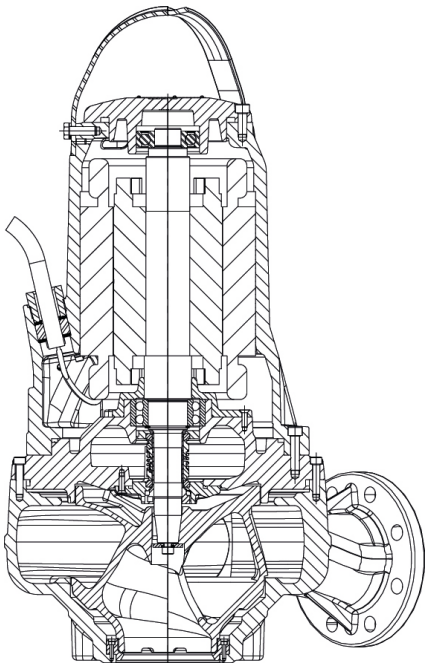
For correct system operation and maintenance, the following operations must be performed regularly (at least every six months):

- Thorough cleaning of the entire tank, the pumps and the float switches.
- Visual inspection of the entire tank, the pipelines and the gaskets.
- Visual inspection of the pump bodies to detect any external defects and visible wear.
- Inspection of the pressurised pipelines, the unions and the valves for any damage due to wear.
- Check to ensure that the pump is operating correctly, performed by observing power drawdown and inspection of the impeller for wear, with removal of any deposits which have formed on it.
- Check on insulating connections to ensure their tightness and detect any signs of wear.
- Check on pump motor insulation.
- Check that the thermal protection device is operating correctly.
- Check that the control panel indicator lights are operating correctly.

These checks should also be performed after a lengthy period out of use or temporary storage.

Information about pumps.

The pump must be inspected at regular intervals.
In the event of an increase in operating noises, reduction in flow rate or vibrations on the pipeline system, check the pump housing and impeller for solid dirt or significant evidence of wear.
In all cases, the maintenance instructions provided in the manual accompanying the pumps consigned with the system should also be complied with.
All pumps supplied with systems are started and tested in the production factory to ensure that they operate correctly. A lengthy period out of use or in store, especially if submerged, may cause pump malfunctions or seizing. Users should therefore check regularly that pumps are still in good working order, since the warranty cover is valid from the date of the delivery note for the system as a whole.



3. HANDLING AND INSTALLATION PROCEDURES

This installation document relates to the following types of tanks and specific uses:

Type of tank:

FEKAFOS MAXI 1200-3600

Tank type used:

- Always full
- Full and empty
- Lifting
- Above ground

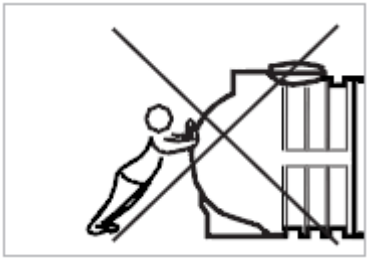
3.1 PRELIMINARY OPERATIONS



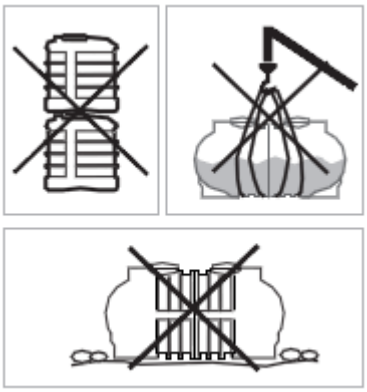
LEGAL OBLIGATIONS
Throughout all operations, compliance with Italian Legislative Decree 81/2008 and subsequent amendments and additions on the safety of temporary and mobile worksites is compulsory. Before installation, inspect the tank carefully for damage.



HANDLING AND USE
Sling the tank with ropes of suitable load capacity, or use the eye-bolts provided for lifting. The lifting and handling equipment used must have suitable load capacity and must meet the current legal requirements. Do not install the tank close to heat sources. During handling, place suitable warning signs around the operating area.



LOADING AND UNLOADING
Loading and unloading must be carried out with care: tanks must not be dropped or slid along the sides of the truck during loading and unloading but must be lifted and deposited with great care. Do not stack tanks during storage as this may damage them.

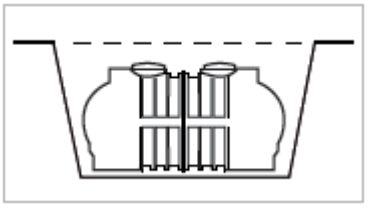


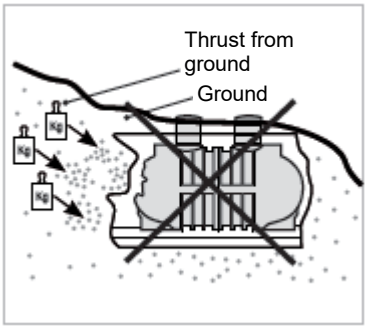
DO NOT HANDLE THE TANK EVEN WHEN PARTIALLY FULL.

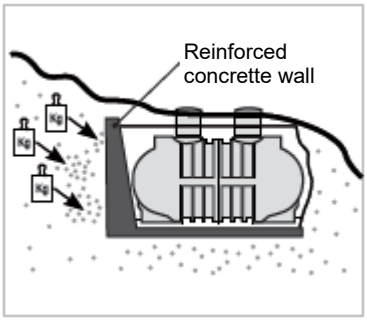
DAB PUMPS tanks must only be used buried in the ground. **Do not use above ground.**
In the event of use above the ground, comply strictly with the instructions provided in the *"Installing tanks above the ground"* section.

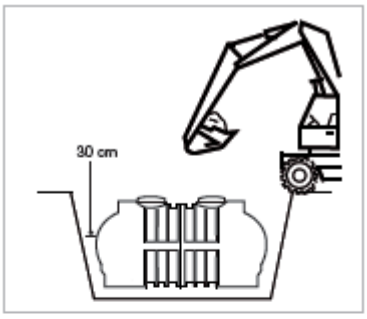
3.2 PREPARING THE PIT AND INSTALLATION SUBSTRATE

INSTALLATION ON SLOPES
Tanks must never be installed on loose ground, on slopes, against embankments which generate a load on the tank, or in positions where rainwater is channelled.
In situations of this kind it is essential to call in an authorised engineer who will recommend the right procedures for overcoming the problem.



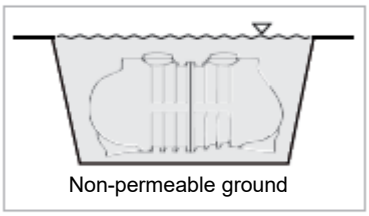




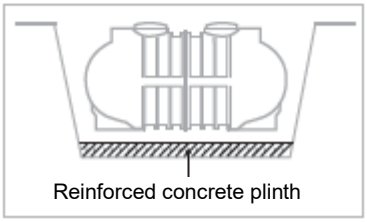


PIT

Pit size
Prepare a flat-bottomed pit of suitable size with self-supporting sides, so that there will be a gap of about 30 cm all around the tank.

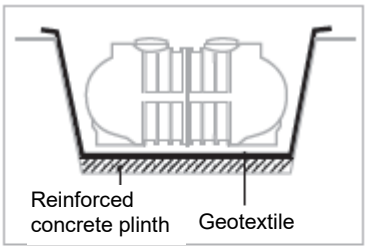


Drainage.
On clay or silt soils which are not permeable to water, a drainage system should be provided to prevent variations in the pressure applied to the tank in different points due to the build-up of water in the pit after rainfall.
If no drainage system is present and one cannot be created to drain the water from the bottom of the pit, follow the instructions provided in the *"Pits with groundwater present"* section.

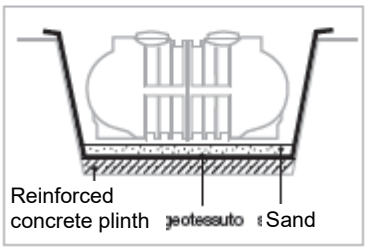


Type of ground.
If the ground is not uniform, a reinforced concrete plinth of suitable strength, calculated by a qualified engineer, must be provided in the bottom of the pit.

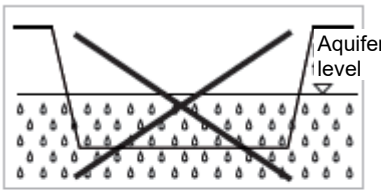
Lining.
Line the sides of the pit with geotextile to prevent the filling material around the tank from subsiding sideways, causing gaps which would lead to differences in the pressure applied to the tank.

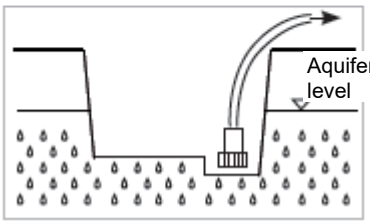


Installation substrate.
Create a layer of sand at least 5 cm deep on the bottom of the pit or above the plinth so that the tank is resting on an even, compact base and is not directly touching the bottom of the pit or the reinforced concrete plinth.

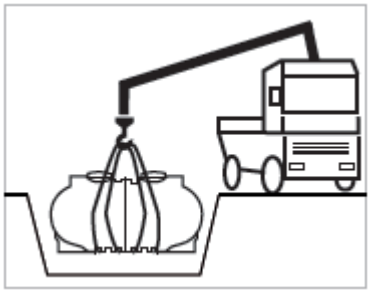


Pits with groundwater.
During creation of the pit, it is essential for the tank installation site to be dry to allow the operations to be carried out correctly. Therefore, any water from shallow aquifers must be removed, with the aid of pumps, for example.
Lay a reinforced concrete foundation capable of withstanding the pressure from the aquifer underneath.





3.3 POSITIONING AND ANCHORING THE TANK

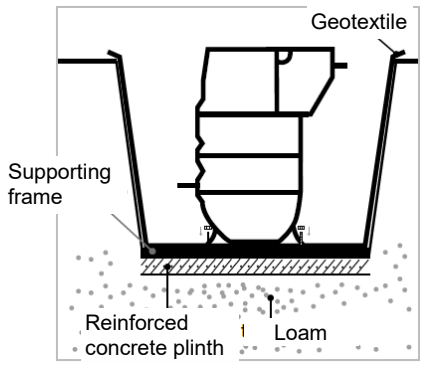


POSITIONING THE TANK
Before placing the tank in the pit, it is essential to make sure that the gaskets, pipes and all non-polyethylene parts in the tank are suitable for the liquid it is to contain.

ANCHORING
During construction of the substrate, provide and position sunken anchor fittings around the tank, referring to the dimensions provided in the technical information and bearing in mind the type of tank to be installed.

3.4 POSITIONING LIFTING TANKS

ANCHORING



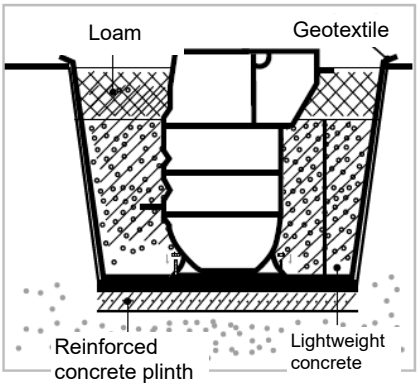
FEKAFOS MAXI 1200-3600 tanks
Position the tank on the concrete foundation and drill holes in the foundation corresponding to the fixture points provided on the base of the product.
Then insert the pressure screws in the holes made and secure the tank.

FILLING IN
For filling in and levelling operations, follow the guidance provided in the specific drawings and relevant sections in this manual.
WARNING: check again that the tank vent has been connected correctly.

3.5 FILLING IN THE PIT

GENERAL PRECAUTIONS
- To prevent abnormal deformations of tanks and inspection turrets, during filling-in operations always keep the level of the water inside above the filling-in level.
- Take special care to ensure that the infill material is evenly compacted across the whole external surface of the tank, to prevent the formation of air pockets which would cause variations in the pressure applied to the tank, leading to deformation and/or failure.
- Covers and caps must only be removed to fill the tank and absolutely must be in place during filling-in operations.
- The tank must never be filled when outside the pit.
- NEVER fill in the pit with excavation spoil.

TANKS WHICH MAY ALSO BE EMPTY DURING OPERATION
Apply the infill material in layers of 15/20 cm, first filling the tank with water and then filling in as shown on the left, with lightweight or lean concrete. The infill concrete must be liquid so that it covers the entire outer surface of the tank, up to its top level.
This backfill must provide sufficient support and counterthrust over the whole outer surface of the tank.



FINISHING THE INFILL

The procedure below applies to all tanks irrespective of operating mode.

After filling in with concrete, apply the infill material in layers of 15/20 cm, first filling the tank with water and then filling in with lean or lightweight concrete up to a depth above the maximum level reached by the groundwater.

The infill material must be liquid so that it covers the entire outer surface of the tank, up to the top level of the tank cover.

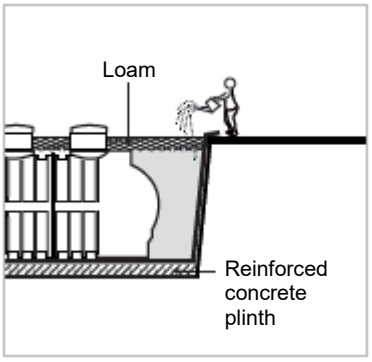
To conclude, add a layer of washed round gravel and sand to completely cover the tank.

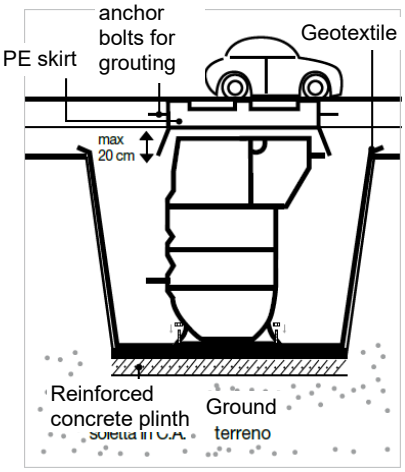
Model	**Infill materials**		
	Concrete	Lean / Lightweight concrete	Sand and washed round gravel
FEKAFOS MAXI 1200-3600	-	X	#
	- to 1/3 of height X up to a height above the max groundwater level # up to the level of the top of the tank		

3.6 LANDSCAPING THE PIT, PEDESTRIAN AND VEHICLE TRAFFIC

General Instructions

Once the tank has been covered to the level of the top of its cover, it can be landscaped with loam up to the level of the surrounding ground.





VEHICLE TRAFFIC ON INFILL AREA
For traffic access over the FEKAFOS MAXI lifting tanks a top cover accessory is available with a polyethylene skirt (which allows height adjustment with a max. excursion of 20 cm), with traffic-accessible manholes fitted on a steel frame with anchor bolts for grouting to the concrete foundation that covers the tanks.

Once these precautions have been complied with, the specific process performed with the treatment system can be started, with reference to the enclosed specific **OPERATOR'S MANUAL.**

3.7 INSTALLING TANKS ABOVE THE GROUND

Fekafos 1200 Maxi, Fekafos 1700 Maxi and Fekafos 2200 Maxi lifting stations can also be installed externally without any additional support. For this installation it is recommended to create an even base for the tank and fix it to the ground using the connections in the lower part of the product.
Above-ground installation is not allowed for FEKAFOS MAXI 3600 models.
For handling and transport, reference should be made to the specific points above.

INSTALLATION FOR FEKAFOS MAXI 1200-3600 TANKS
Construct a properly levelled reinforced concrete plinth, designed for the relevant loads, ensuring that a layer of sand/gravel is laid beneath it.

