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Instructions for installation and maintenance Herkules tank (430 gallon/1600 litre)

Herkules tank for above-ground and underground installation:
Item number: 200200

Check the tanks for possible damage before installing them into the excavation pit.

The installation must be conducted by a qualified company.



PLEASE NOTE:

Read through these instructions before beginning installation.

It is important to follow the steps described in these instructions. Failing to follow these instructions will void any warranty on this product.

Keep this instruction manual and make it available for all end-users.

FAILURE TO COMPLY WITH THESE INSTRUCTIONS CAN RESULT IN SERIOUS PERSONAL UNJURY OR DEATH AND/OR SEVERE PROPERTY DAMAGE.

RainHarvest Systems is not responsible for any damages or injuries that result from improper installation and/or use.

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1. Preliminary Considerations

▲ WARNING ▲

KEEP THIS INSTRUCTION MANUAL AND MAKE IT AVAILABLE FOR ALL END USERS

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- ▲ DO NOT USE RAINWATER COLLECTED WITH THIS EQUIPMENT FOR POTABLE APPLICATIONS SUCH AS DRINKING, SHOWERING, OR COOKING unless you are using a filtration system specifically designed and approved for producing potable water from harvested rainwater. Water collected with this system should only be used to water outdoor plantings, wash vehicles, or use in other outdoor cleaning tasks. Water may be stagnant or contaminated and can cause serious illness and/or death if ingested.**

- ▲ When working on any electrical system and/or system components, the entire system must be disabled by disconnecting it from any and all power sources to prevent an accidental restart.**

- ▲ The tank cover must be closed at all times, except when performing maintenance on the tank otherwise there is a very high risk of accident or injury. Only original equipment covers or covers approved by the manufacturer in writing are to be used.**

- ▲ Separate installation instructions will be shipped with any additional manufacturer-approved items you have purchased. Consult those instructions before making additions to your rainwater collection system.**

▲ WARNING ▲

1. Preliminary Considerations

▲ ADDITIONAL WARNINGS ▲

1.1 Safety Issues

All applicable federal, state, and local safety regulations should be observed during assembly, installation, maintenance, and/or repair of this equipment. When inspecting tanks, we strongly recommend that a second person be present.

The installation of the system must be conducted by qualified professionals.

The manufacturer offers a comprehensive portfolio of accessories that are designed to work with each other and can be developed into complete systems. Using unapproved components may cause the system to malfunction, in which case any existing warranties will not be applicable.

Wear safety glasses and gloves when drilling or cutting during this installation.

DO NOT ALLOW CHILDREN NEAR THE TANK BEFORE, DURING, OR AFTER INSTALLATION WITHOUT DIRECT SUPERVISION BY A COMPETENT PERSON.

1.2 Compulsory Labelling

All lines, connections, and outlets of water processed with this equipment must be labelled with the words “UNTREATED RAINWATER: DO NOT DRINK” in writing or graphically in order to avoid an accidental connection to the drinking water network even after years of use. Even when there are correct labels, mistakes are possible if children or other persons unfamiliar with the system are allowed access.

Additionally, all points where water processed by this system is accessible outside the system must be equipped with child-proof valves.

1.3 State Regulations

The State of Colorado has strict requirements governing the diversion and use of rainwater. Please check local and state requirements to see if special approval must be obtained before the installation of this or any other rainwater harvesting equipment.

2. Installation / assembly conditions

2.1 Above ground Installation

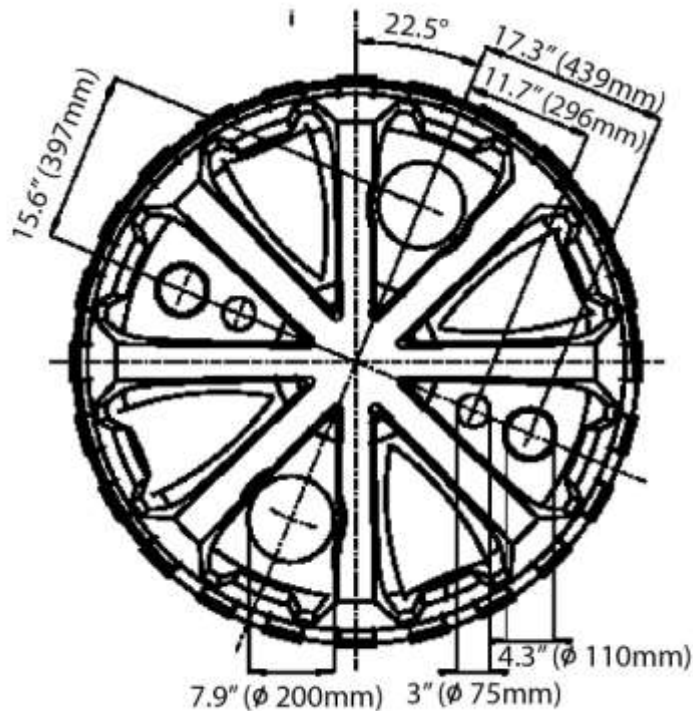
- Tanks must be installed on firm, level ground without rocks.
- Installation site must be able to support the weight of the filled tank (3,640 lbs/1650 kg).
- If this equipment is installed where there is a risk of frost, the tanks must be completely drained before the winter season.
- The tank should not be installed in an enclosed room unless there is a floor drain in that room.

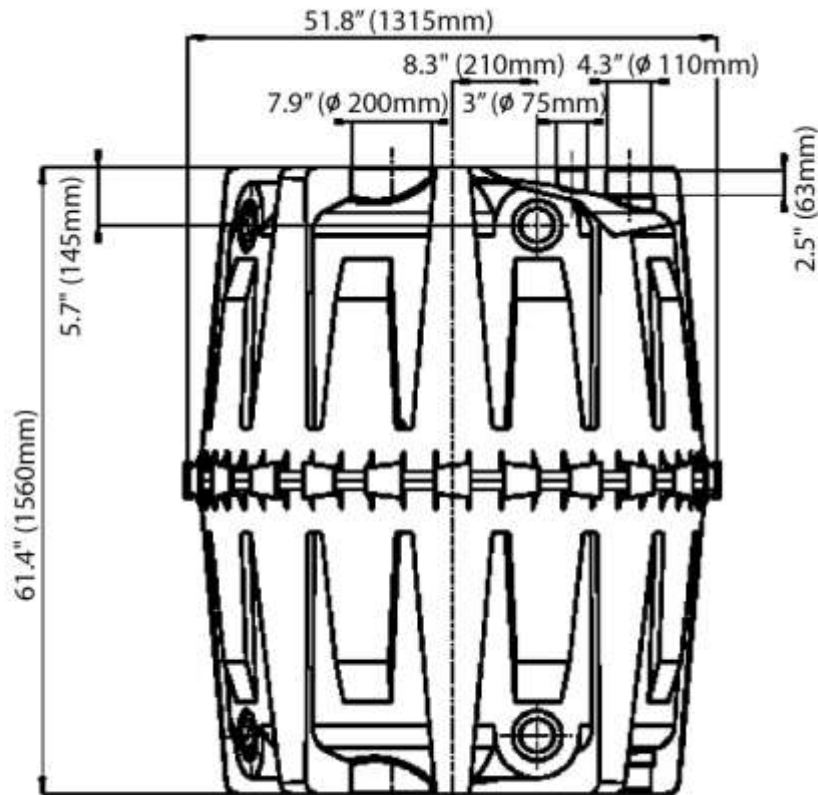
2.2 Underground Installation (Requires Underground Installation Kit)

- Underground installation requires the use of the center support tube (item number: 322025). This configuration allows the installation of the tank below the surface as long as there is no more than 3 feet (100 cm) of dirt above the top of the tank.
- The tank dome (item number: 322026) must be installed to allow access to the tank after subterranean installation.
- If equipment is to be installed in a location with a high water table or on a slope follow the additional installations procedures on Section 6.2.4.

3. Technical data

Tanks may be installed below ground only in areas where there is nothing more than pedestrian traffic within 8 ft. (2.6 m) of the installation site.





4. Transport and storage

4.1 During Transportation

Tanks must be secured properly during shipment to prevent the load from shifting or falling off the transport vehicle. Load straps should be used carefully to prevent damage to the tanks.

Caution: Do not use clamps or lift the tanks using steel ropes or chains.

Caution: Do not roll or drag the tanks.

4.2 Storage

If the tanks have to be stored temporarily, they must be stored on appropriate, level ground without rocks. During storage, take appropriate measures to protect the tanks from damages due to environmental or external causes.

5. Tank Assembly

5.1 Tank Preparation

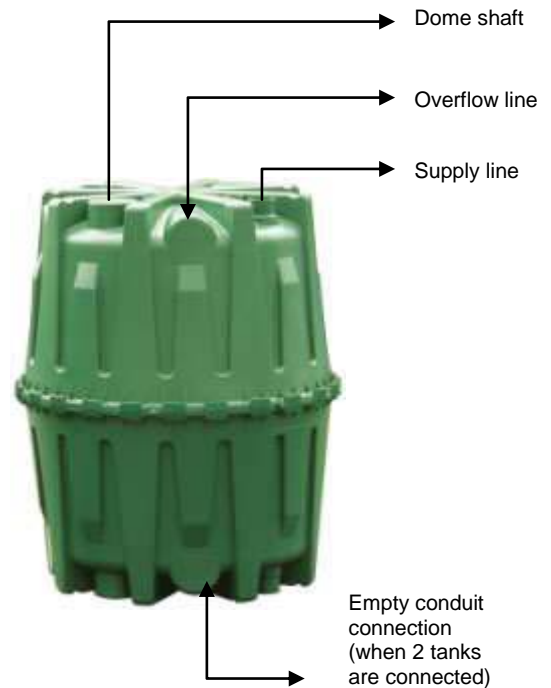
Before installing the tank it should be temporarily assembled to make it easier to drill out the openings for the following:

1. Empty conduit connection
2. Supply line
3. Overflow line

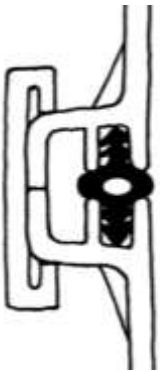
After drilling the holes, remove all excess plastic pieces and shavings from the tank.

5.2 Tank Assembly

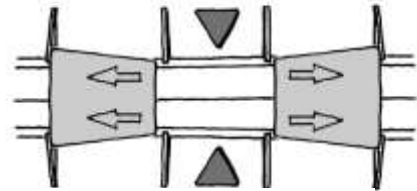
The tank consists of two identical halves. To assemble the tank, place one of the halves on level ground, closed-side down. The circular gasket should be well-coated with the included lubricating soft-soap and pressed into the circumferential inner groove with the side marked 'Innenseite' facing toward the inside of the tank. Before the second half of the tank is set in position, the exposed portion of the gasket and the seat recess of the upper half must also be well-coated with the lubricating soft-soap. When adding the second half make sure the gasket doesn't slip out of the groove. This second half will only fit in one position; line up the arrows



NOTE: If the tank is to be installed under ground, the support tube (item number: 322025) must be placed in the center of the lower shell before adding the second half.



To secure the two halves together, attach the quick connectors in an alternating manner to the left (counter-clockwise) and to the right (clockwise). For this, every second connector should be adjusted by hand initially, and then driven securely into place using a hammer and a block of wood. If attaching the clips is problematic, try lubricating the inner edges of the connectors and/or using 3 – 4 C-clamps positioned evenly around the lip of the tank during the installation.



Ensure that the connectors are engaged in their final position. After completing the installation of the first half of the connectors, repeat the procedure for the remaining connectors.

6. Installation

6.1 Above ground installation

If this equipment is installed where there is a risk of frost, the tanks must be completely drained before the winter season. The tank should be installed in a shady environment, on firm, level ground without rocks. Installation site must be able to support the weight of the filled tank (3,640 lbs / 1650 kg). The tank should not be installed in an enclosed room unless there is a floor drain in that room. The tank must not be pressurized, i.e. the overflow installed (on the side of the tank) has to have the same diameter as the supply. It is imperative to provide sufficient ventilation.

6.2 Underground installation

6.2.1 Foundation

When determining where to install the tank, the following should be clarified prior to installation:

- The structural suitability of the ground for this purpose.
- The minimum depth of water table/maximum groundwater levels and porosity/drainage capability of the subsoil.
- The types of load which will occur above the tank location.

In order to determine the soil composition and suitability for the project, local building codes and governing agencies should be consulted.

6.2.2 Excavation pit

In order to provide sufficient room to work, the footprint of the excavation should exceed the dimensions of the tank by 2 feet (50 cm) on each side. The excavation walls must also be at least 2 feet (50 cm) from any existing buildings.

The embankment must be constructed in accordance with all local, state and federal guidelines and requirements. The foundation soil must be level and guarantee sufficient load-bearing capability.

As specified in Section 2.2 of this manual, there must be no more than 3 feet (1 meter) of soil above the tank. In order to use the system year-round, the tank and those parts of the system that conduct water must be installed in the frost-free zone of the soil profile. Normally, the frost-free depth is between 24 – 32 inches (60-80 cm), but your local soil composition may vary; check with local agencies to get information specific to your area.

A 6" – 8" (15 -20 cm) layer of compacted pea gravel (grain size 8/16) should be used as a foundation. If the soil has inadequate load-bearing capabilities, a reinforced concrete slab approximately 4 inches thick should be poured to ensure stability.

6.2.3 Ground water and cohesive soils (impervious to water)

Installing the tanks in areas with a higher water table is permissible if a sufficiently stable geogrid (not included in this kit) is installed. The geogrid (tensile force at least 7.25 psi [50kN/m²] in longitudinal and cross direction) should measure 8'3" by 8'3" (2.5m by 2.5m) and be installed and anchored securely above the tank as safety measure against heaving.

Minimum coverage (ground surface to top of tank) in case of higher water-table and permeable soils (a geogrid should be installed any time a tank is installed within the water-table to protect against heaving):

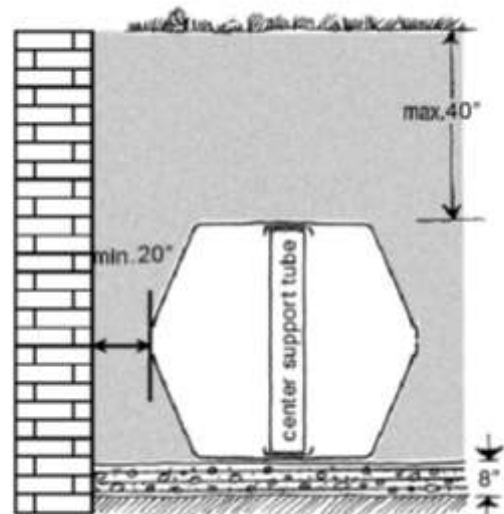
Immersion depth of the tank into water-table	$\leq 25\frac{5}{8}"$ (65cm)	31 1/2" (80cm)	40" (100cm)	47 3/16" (120cm)	63" (160cm)
Minimum coverage (ground surface to top of tank)	$\geq 15\frac{3}{4}"$ (40cm)	20" (50cm)	27 1/2" (70cm)	31 1/2" (80cm)	35 3/8" (90cm)

If there is a risk of exceeding the maximum permissible water-table level, a drainage line of an appropriate size should be installed.

In case of cohesive soils (impervious to water), e.g. silt, a minimum coverage (ground surface to top of tank) of 35.4" (90cm) (including the geogrid) and an appropriately sized drainage line are mandatory.

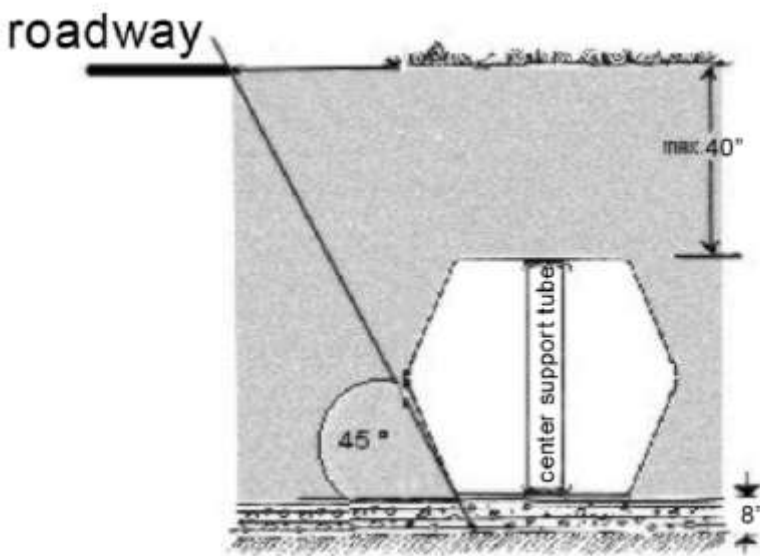
6.2.4 Hillside situation, slope, etc.

When installing the tank in the direct vicinity (<16ft / 5m) of a hillside, mound or slope, a statically calculated support wall must be constructed in order to accept the soil pressure. The wall must exceed the dimensions of the tank 2 ft (50cm) in all directions and must be a minimum of 2 ft (50cm) from the tank.



6.2.5 Installation next to areas allowing vehicular access

When installing the tanks near areas accessible to vehicles, precautions must be taken to prevent the transference of vehicle weight to the tanks. The lower edge of the tank must be at no more than a 45 degree angle to the outer edge of the roadway. The minimum distance to the areas accessible vehicle traffic is 8'6" (2.6 m).



6.2.6 Connecting multiple tanks

Two or more tanks can be connected using the mounting areas situated on the bottom of the tanks via standard bulkhead fittings and interconnecting PVC pipes (an arrangement commonly referred to as “balancing lines”). A minimum 2” PVC pipe is recommended. Bulkhead fittings may be obtained from Rain-Harvest Systems. If more than two tanks are connected, a connection on the upper side (for ventilation purposes) must be made in addition to the connection near the bottom (aeration pipe to be provided by customer).



6.2.7 Insertion and backfilling

Lower the tank (or tanks) carefully into the prepared pit. (Also please review Section 3 - Transport and Storage)

Fill the tank with water up to 1/3 of its capacity **before** starting to fill in around it.

Fill in the pit around the tank using pea gravel (maximum grain size 8/16) in 1 ft (30 cm) increments until reaching the height equal to the interior water level. Individual layers must be well compacted by hand; **mechanical compaction machines must not be used under any circumstances.**

Add water to the tank until it is approximately 2/3 full and repeat the process detailed above for filling in around the tank.

Continue the process (layering a foot at a time and compacting manually) until the gravel measures approximately 6 inches (15 cm) over the top of the tank. At that point you may switch to soil and finish filling in the pit.

The compacted area must extend at least 2 ft in all directions from the tank.

6.2.8 Routing the connections

All supply and overflow lines must be routed with an incline of at least 1% (1.2” per 10 ft or 1 cm per 1 meter). The lines are connected to pre-drilled recesses on the tank or to mold ports to be opened. If the tank overflow is connected to the public sewer system, it must be protected against backflow.

If the tanks are installed in a module system of more than 2 tanks, the supply line must be installed on the first and last tank. In that instance, water is withdrawn from the middle tank. The first and last tanks must both be equipped with an overflow valve.

All suction, pressure and control lines must be routed through an empty pipe, which must be routed on a decline, as straight as possible, to the tank. Necessary bends must be formed using 30° molded sections. The empty pipe should be as short as possible.

NOTE: The empty pipe must be connected to a recess **above** the max water level.

In order to create ventilation for the tank, a 2”-4” PVC pipe for underground installation must be connected to the free recess and routed in an ascending manner. Connection to ventilation systems of other buildings is not permitted.

7. Tank Access Shaft Installation

The tank head has to be put on one of the moulded and opened 8" ports with sleeve. It can be shortened from above, but must not be extended in any case. The supplied telescopic shaft with lid installs flush with the ground. Concrete shafts or similar must not be used by any means. Only the 8" GRAF tank head (item number 202033) may be used.



8. Service and maintenance

The system as a whole has to be checked for leaks, cleanliness, and stability at least every three months.

The system as a whole should be maintained every 5 years. In doing so, all system components have to be cleaned and checked for functionality. Maintenance works should be conducted as follows:

- empty tank completely
- loosen stubborn residue using a pressure washer through the tank head
- remove all contaminants from the tank
- check all installation parts for proper fit and seal

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