

# Installation instructions

## FRANK geothermal energy collector set



### Product description

The FRANK geothermal energy collector set comprises a manhole, a collector pipe and electro fusion fittings for the circuit connections.

The manhole for wall installation has a pre-assembled 2065 type modular plastic brine manifold as well as integrated flow meters.

Heat pump connections and circuit connections with PE 100 spigots. Dimensions:

Heat pump: d 40 x 3.7 mm

Circuits: d 32 x 2.9 mm

Set sizes: 3–8 circuits

### Design instructions

In accordance with VDI Directive 4640 and the information sheet from the German Industrial Association for Building Services, Energy and Environmental Engineering (BDH), geothermal energy collectors should be installed at a depth of approx. 1.2 m to 1.5 m. The distance between the pipes is usually between 0.3 m and 0.8 m. The pipe distances to be selected depend on the substrate properties as well as the climate zone and must be adapted to each location.

The calculation sheet for the FRANK geothermal energy collector set can be used for the design. (see [www.frank-gmbh.de](http://www.frank-gmbh.de))

### General information:

To enable sufficient regeneration, nothing should be built on top of geothermal energy collectors. Areas above the collector must not be sealed so that rainwater can seep in. Deviations from this are possible in exceptional cases, provided that there is a detailed plan for the alternative installation situation.

The collector pipes must be connected to a manifold in parallel circuits. The manifold must be fitted with valves for each circuit.

It is recommended to keep the circuits lengths shorter than 100 m in order to minimize pressure losses. The specifications in the manufacturer's heat pump for the available delivery head of the brine pump must be observed.

The circuits should preferably be of equal length in order to reduce the amount of adjustment required at the manifold. The flow meter on the manifold can be used to produce a constant flow through the circuits. If necessary, the flow rate can be adjusted using the regulating valves.

Cold system parts must maintain a minimum distance of 0.7 m to flow and return lines.

### Preparing for installation

The total area required must be staked out and prepared accordingly. Collector pipes can be installed in trenches or on a flattened surface.

The laying procedure must be specified. Typical procedures include the meander design and the snail design (see figures 1 + 2).

### Installation

FRANK 32 mm collector pipes are made from point load resistant PE 100-RC and can be installed without sand embedding. Backfilling using the excavated material is permitted provided that the material does not contain any sharp objects. The position of the collector pipes should be marked using warning strap for pipe routes. The manhole must be positioned at the highest point of the collector system.

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### Types of laying

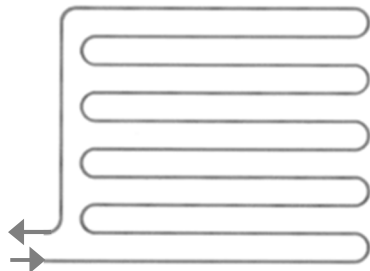


Figure 1: Meander

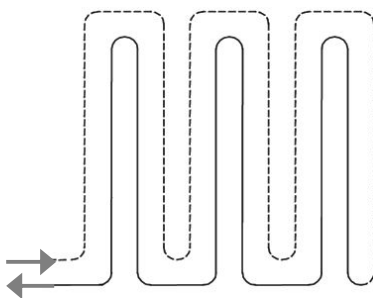


Figure 2: Meander

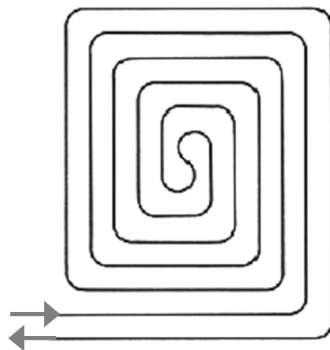


Figure 3: Snail design

Pipe temperature	Minimum bending radius Pipe d 32 x 2.9 mm, SDR 11
0 °C	1.60 m
10 °C	1.12 m
20 °C	0.64 m

Table 1: Bend radius

### Installation

- Before laying the collector pipes, check for signs of visible damage. Do not install damaged pipes.
- The pipe ends should be closed during the laying procedure to prevent dirt from entering.
- Lay the pipes starting from the manifold.
- Align the pipes. You can use ground spikes for better fixation of the collector pipes.
- When laying the pipes, it is essential to observe the permitted minimum bending radii in accordance with table 1 to prevent the pipes from kinking.
- Connect pipe line with welding sockets to the manhole. Observe the welding guidelines (DVS 2207).
- Fill the pipe lines with a ready-mixed heat transfer medium.
- Flush the pipe lines until no air remains.
- Carry out the pressure test (e.g. according to EN 805). (If necessary, the collector circuits can undergo a pressure test individually prior to connection).
- If you use laying aids, remove them after covering the pipes with soil/sand.
- Backfill the installation area with suitable soil and compact it.
- Carry out a pressure test on the overall system, including the pipe lines, manifold and connection cables. If you only carry out the overall system test, make sure that all pipe circuits are pressurised.
- Hand over the test report to the client.