Ground-to-brine heat exchanger SEWT (Kit)

INSTALLATION AND OPERATING INSTRUCTIONS NO 94875

1. GENERAL INFORMATION

To ensure safety and correct operation please read and observe the following instructions carefully before proceeding.

1.1 WARNING AND SAFETY INSTRUCTIONS

⚠ **ATTENTION!**

All servicing only when disconnected from the mains!

The electrical connection should only to be carried out by a qualified electrician. All relevant safety regulation, national standards and norms are to be adhered to.

1.2 WARRANTY – EXCLUSION OF LIABILITY

If these instructions are not fully observed all warranty claims and accommodation treatment are excluded. This also applies to any liability claims extended to the manufacturer.

1.3 CERTIFICATES – CE

If the product is installed correctly and used to its intended purpose, it conforms to all applicable European Standards at its date of manufacture. CE

1.4 RECEIPT

Please check delivery immediately on receipt for accuracy and damage. If damaged, please notify carrier immediately. In case of delayed notification, any possible claim may be void.

1.5 INCLUDED IN THE KIT SEWT (KIT) Ref.no.2564

1x Brine-to-air heat exchanger **SEWT-W** (Ref.no 2565)
1x Hydraulic unit and control unit **SEWT-H** (Ref.no 2566)
1x Undersoil pipe with screw connections and 20 litres of ethylene glycol **SEWT-E** (Ref.no 2567)

1.6 STORAGE

The storage place must be water proof, vibration-free and free of temperature variations. Damages due to improper transportation, storage or putting into operation are not liable for warranty.

1.7 APPLICATION - OPERATION

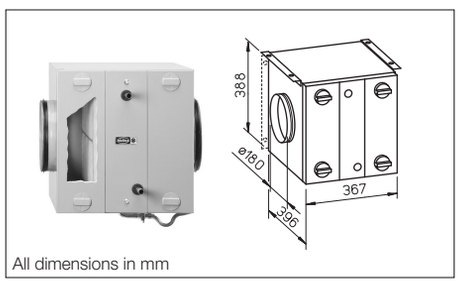
The ground-to-brine heat exchanger (SEWT) provides additional pre-heating of the outside air during winter and pleasant cooling on hot summer days.
The inlet air pass through the brine-to-air heat exchanger unit of the SEWT in which as a heating medium or cooling medium a water glycol mixture (brine) circulates. Therefore the SEWT prevents icing up of downstream the brine-to-air heat exchanger. In the summer the SEWT uses the cooler soil to cool the intake air which provides a noticeable cooling-effect (not air conditioning!) in the building.
The intake air is cleaned by the air filter which is part of the brine-to-air heat exchanger module (filter, class G3) and therefore clogging of the brine-to-air heat exchanger module is prevented.

2. MOUNTING – INSTALLATION INFORMATION

In the following the individual components and/or the delivery sets of the SEWT- kit are described.

2.1 BRINE-TO-AIR HEAT EXCHANGER MODULE SEWT-W

2.1.1 Included in the module SEWT-W (Art.Nr. 2565)



All dimensions in mm

1x Brine-to-air heat exchanger module including filter (class G3)
1x Condensation trap (1 piece)
1x Mounting bracket (2 pieces)

2.1.2 General information

The brine-to-air heat exchanger module consists of a double skinned, completely insulated casing (50 mm thick) made of steel, powder coated in grey. With the wall brackets the module can be fastened to the wall or under the ceiling.
The 180 mm diameter connecting spigots are provided with double seal gaskets to connect to insulated circular duct such as the Helios IsoPipesystem. Within the casing is a condensation outlet (condensation trap included in delivery) with ½ " external thread.
The warm brine at approx. +8° to +12° tempers the incoming outside, depending on the season, heating or cooling the air via the highly efficient brine-to-air heat exchanger. The integrated G 3 filter prevents the contaminating of the heat exchanger and therefore a loss of performance.

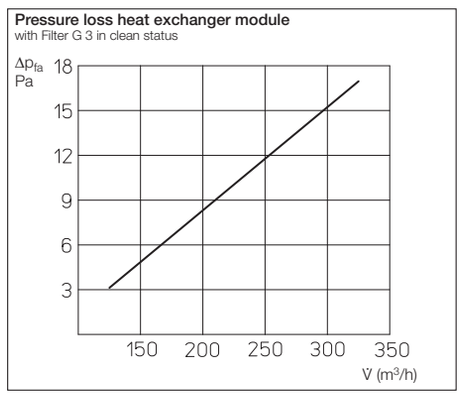
-Filter change

The filter should be examined at the least every 3 months and be changed at least once a year dependent on the degree of pollution. The filter can be replaced easily via access panel without using tools.

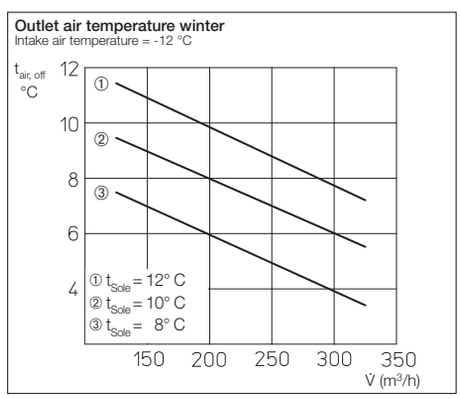
NOTE: The suitable Helios spare air filter (Ref.no. 2568) can be ordered also in the internet under **www.ersatzluftfilter.de.**

2.1.3 Technical data

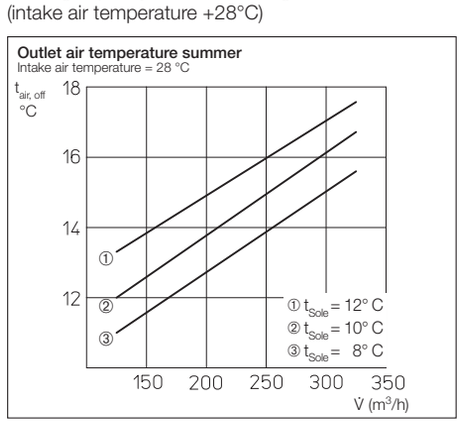
Pressure loss air data



Heating capacity of heat exchanger (intake air temperature –12°C)



Cooling capacity of heat exchanger (intake air temperature +28°C)



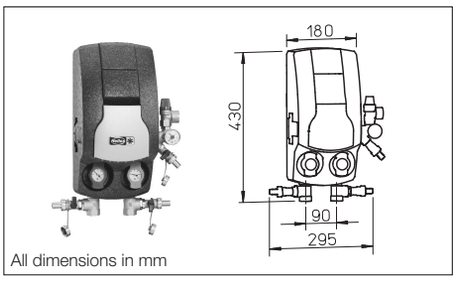
2.1.4 Installation information

The heat exchanger module SEWT-W is mounted inline before the fan/ventilation unit. It is vital that the air flow through the heat exchanger module is in a horizontal direction. The G3 filter must be installed on the outside air side of the system for the protection against contamination and prevention of loss in performance it. It is recommended that approx 1 m straight pipe upstream and downstream of the SEWT-W for optimum performance. The fastening of the heat exchanger module SEWT-W is via the brackets provided.

The following assembly options are available:

Either wall fastening (see page 3, fig.1) or ceiling suspension (see page 3, fig. 2). Care should be taken with the assembly so that draining and air bleeding of the SEWT-W is possible. The condensation trap must be filled with water before start-up to avoid the build-up of odours.

2.2 HYDRAULIC MODULE SEWT-H



All dimensions in mm

2.2.1 Items included in the SEWT-H (Ref.no. 2566)
1x **SEWT-HBG** hydraulic set (230 V) (Ref.no. 94843)
1x **SEWT-AG** pressure expansion tank (Ref.no. 94845)
1x Automatic quick vent valve with check valve (Ref.no. 94844)
1x Thermostat module with 2 set-point values (Ref.no. 93918)
1x Operating switch SEWT (Ref.no. 94880)
1x Terminal box SEWT (Ref.no. 94887)

2.2.2 General Informationen
The SEWT-H is a complete hydraulic set with all components needed to connect the ground-to-brine heat exchanger system and suitable control unit for the automatic and/or manual operation of the system.
⚠ ATTENTION: To avoid damage, the hydraulic set may only be operated with a completely filled system with any air removed from the brine circuit.

2.2.3 Installation information
The remaining pipe-work and connection to the hydraulic set to the system components shall be provided on site. The pipe connections of the hydraulic set are ¾" IG. The fastening is made via the connecting pipes.
The expansion tank is delivered with a wall bracket and quick-action stop valve with screw connection ¾" IG. The connection of the pipes is carried out on site. The quick vent valve must be installed at the highest point of the pipe-work (see page 4, schematic illustration of the assembly). In order to avoid condensation and heat loss all pipe runs in the building are to be fully insulated.

2.2.4 Start-up and operation
The antifreeze has to be homogeneously mixed with water first before filling the pipe-work system to ensure the frost resistance of the brine liquid. The following mixing ratios apply to the ethylene glycol offered by Helios:

Mixing ratio glycol	Frost-saftey till °C
22 Vol%	-10 °C
29 Vol%	-15 °C
35 Vol%	-20 °C
40 Vol%	-25 °C

The filling is carried out via the feed and drain cock located on the hydraulic set. When filling the pipe-work system take care to avoid air entering the system. The pipe-work system is operated with a high pressure -approx. 1.5 bar.
A diagram of the hydraulic connection is shown in fig. 3 on page 3.

2.3 UNDERSOIL HOSE SET SEWT-E

2.3.1 Items included in the SEWT-E (Ref.no. 2567)
1x Undersoil pipe, 100 m (DN 32 x 2,9 mm) (Ref.no. 94847)
1x Screw connection set (32-1") with active sealing system (Ref.no.94848)
1x Ethylene glycol, free of amine and nitrite, 20 l canister (Ref.no. 94849)

2.3.2 General information
The SEWT-E is an under-soil pipe set with screw connections and 20 litres ethylene glycol.
IMPORTANT: The installation of the pipe-work is may need to be declared to the local water authority or perhaps has to be approved by it..

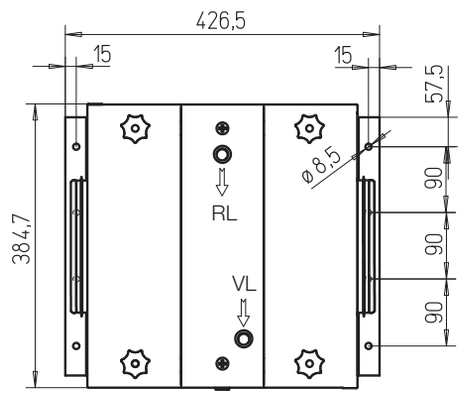
2.3.3 Installation of the pipework
The flexible PE HD (polyethylene high pressure hose) undersoil collector pipe should be laid in a non-freezing depth of approx. 1.20 -1.50 m to ensure the highest possible heat transfer. If laid in parallel the pipes should be between 600 mm and 1 m apart depending on soil conditions. The area where the undersoil pipe is laid may not be built over so that it is guaranteed that seeping rainwater can contribute to the thermal regeneration of the soil.
To avoid damage the under-soil collector pipe should be sufficiently embedded in a well compacted stone-free material (soil or sand bed). To avoid damage with possible subsequent earthworks approx. 30-50 cm above the collector installation area a safety protecting strip should be laid as well.
The bending radius of the pipe is depending upon ambient temperature between 0.8 m (20 °C) and 1.5 m (5 °C). An installation of the pipework at a low outside temperature (below 5 °C) is not recommended.
So that the undersoil pipe can have any air vented correctly, the pipelines must be laid with a gradient up to the connections of the hydraulic set. After the installation and backfilling the undersoil pipework should be checked by means of a high-pressure test for leak tightness, so that it is guaranteed that when backfilling the piping was damaged.

3. MAINTENANCE – SERVICING

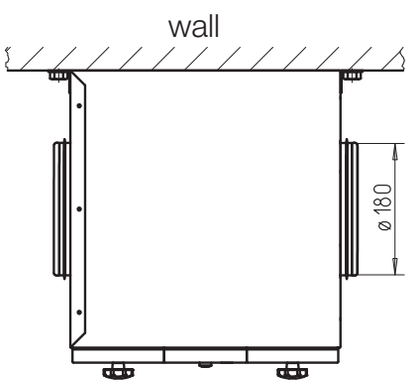
3.1 SYSTEM OPERATING PRESSURE
The system operating pressure should be checked approximately once a year and should be 1.5 bar.

3.2 ACCESSORIES, SWITCHES AND CONTROLLING DEVICES
The use of accessories not offered or recommended by Helios is not permitted under the warranty.

■ fig 1. **Wall fastening**

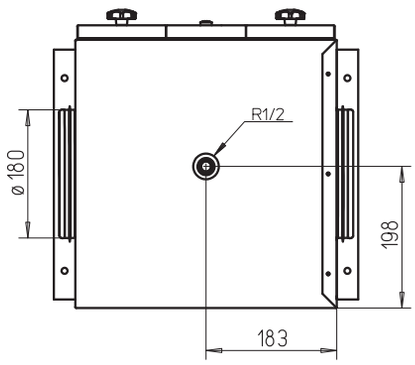


view: front

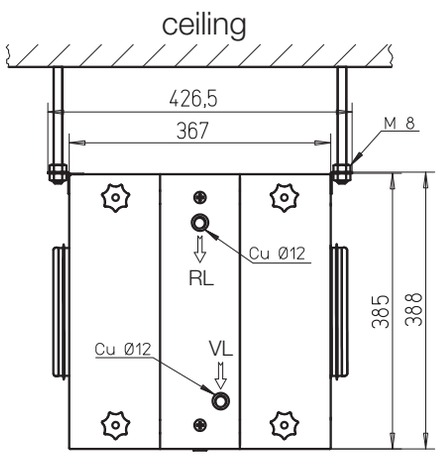


view: top

■ fig 2. **Ceiling suspension**

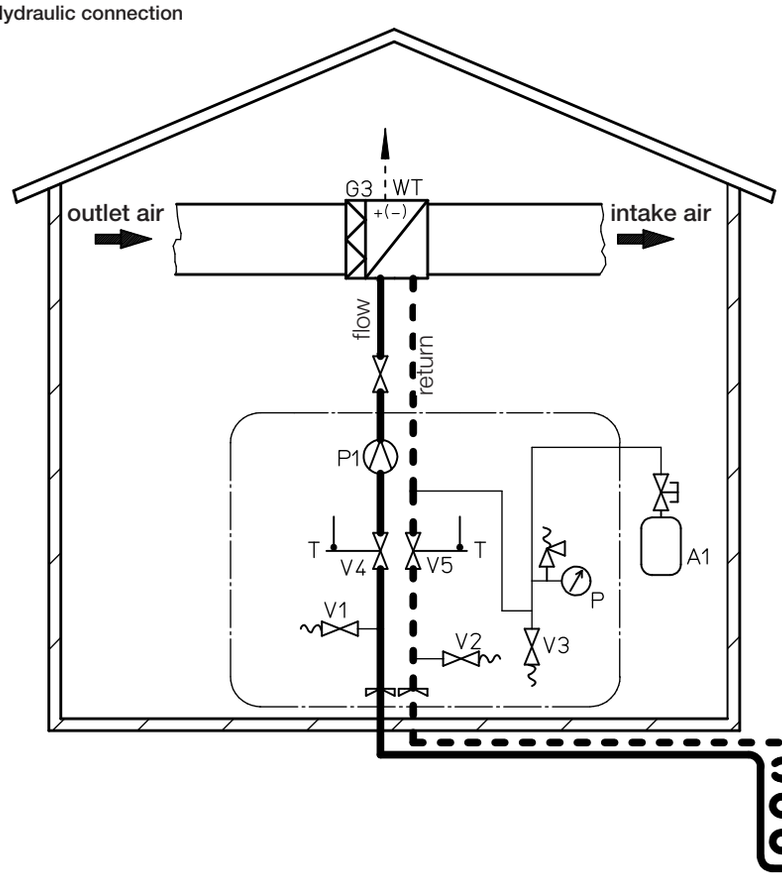


view: below



view: front

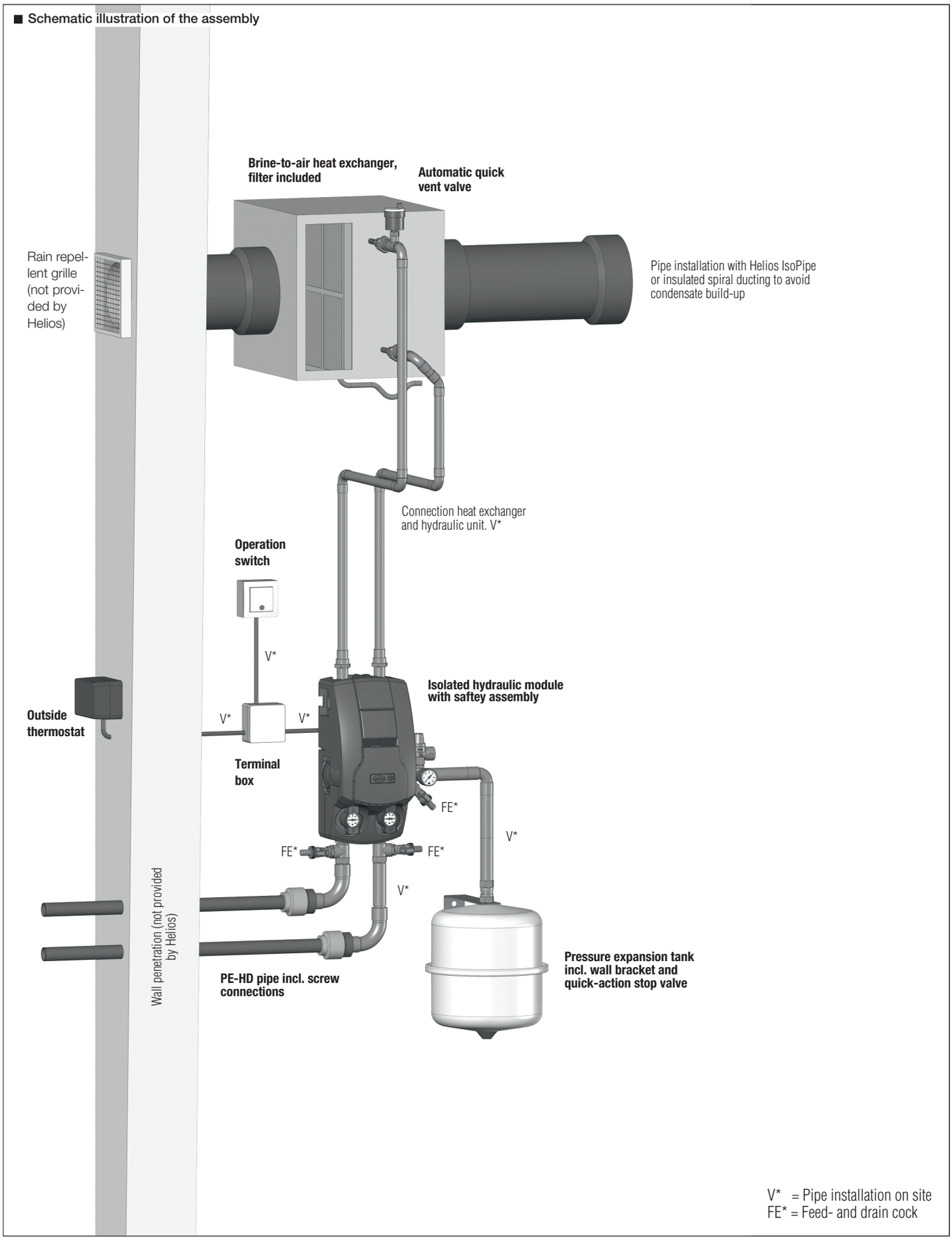
■ Hydraulic connection



Legend:

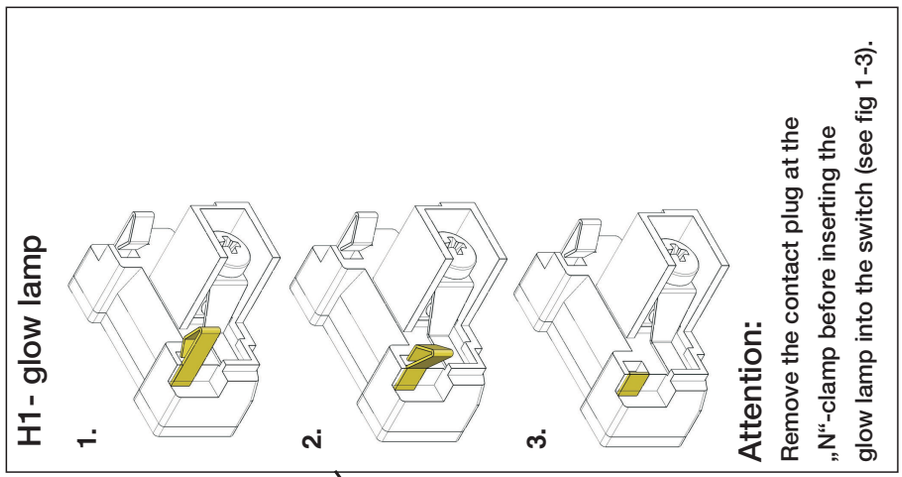
EV	=	Automatic quick vent valve
WT	=	Brine-to-air heat exchanger with filter (G3)
P1	=	Circulating pump
V1-V3	=	Feed and drain cock
V4-V6	=	Check valve
V7	=	Quick-action stop valve
T	=	Thermometer
SV	=	Safety relief valve
P	=	Pressure manometer
A1	=	Pressure expansion tank
EK	=	Undersoil pipe
VS	=	Screw connections

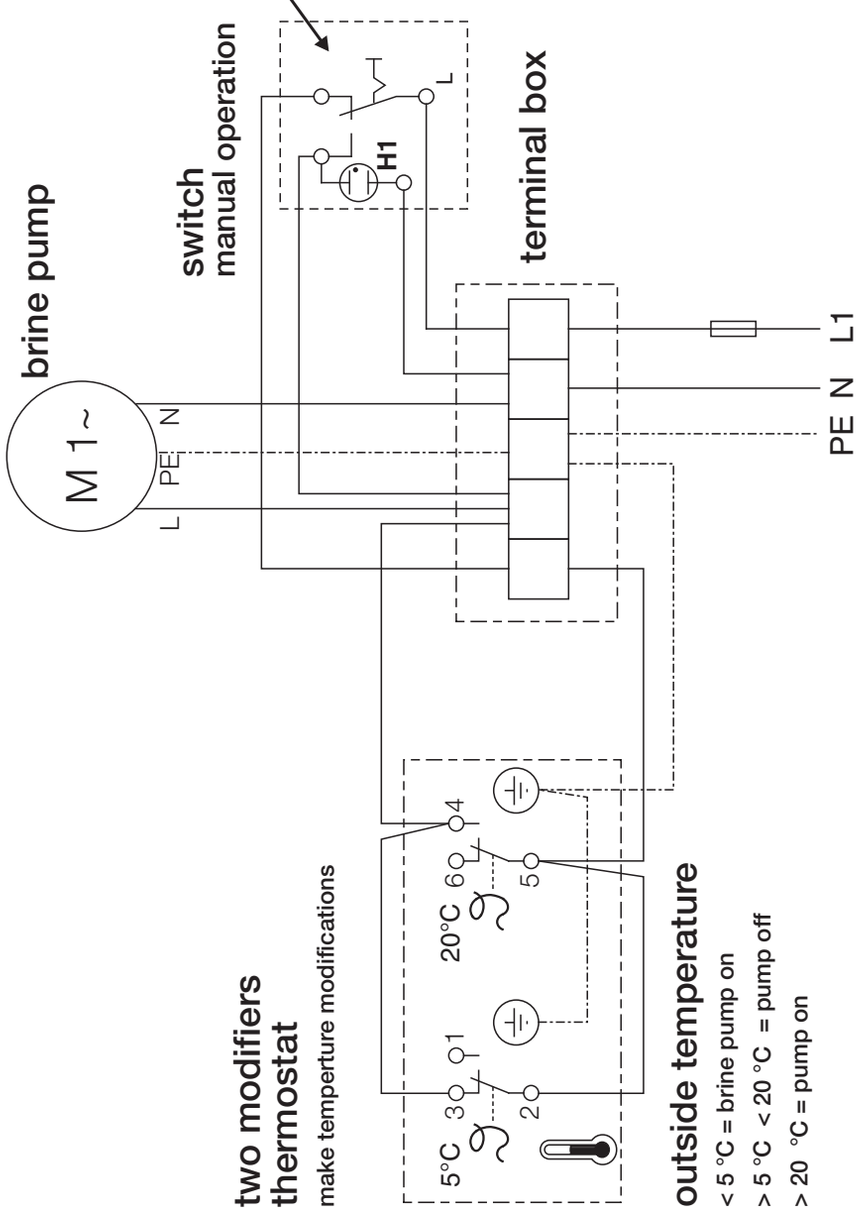
■ Schematic illustration of the assembly



V* = Pipe installation on site
FE* = Feed- and drain cock

■ Wiring diagram SS-906





Ground-to-brine heat exchanger SEWT (Kit)

7. SAFETY DATA SHEET ACCORDING TO THE COMMISSION directive 91/155/EWG

1. Identification of substance

Company identification:	**Anti-freezing agent**

2. Composition/Information on Ingredients

Chemical characteristics:	Mixture of ethylene glycol (1.2-ethanediol) and corrosion inhibritors
CAS-No.:	107-21-1
Identification of substance:	Ethylene glycol

3. Possible risk

Hazard information:	**Harmful to health:** Can cause lung damage if swallowed

4. First aid measures

After contact with eyes:	Rinse eyes thoroughly with water
In case of skin contact:	Wash off with water and soap
After ingestion:	Do not cause any vomiting
In case of inhalation:	No measures necessary

5. Fire-fighting measures

Suitable extinguishing media:	Dry chemical fire extinguisher, carbon dioxide, foam, fogging water
Extinguishing media that should not be used:	Full water jet
Special protection equipment:	Use self-contained breathing apparatus
Combustion products or emerging gases:	Nitrogen oxides, carbon monoxide, sulphur dioxide, carbon black and other organic produc

6. Accidental release measures

Precautions for persons:	Danger of skidding after spillage/leakage
Environmental precautions:	Do not discharge into drains undiluted
Cleaning/Take-up-processes:	Absorb with soaking material (sand, soil or calcium carbonate) and dispose of according to current local regulations

7. Handling and storage

Instructions for safe handling:	Avoid contact with eyes. Do not eat, drink, or smoke during work
Instructions for fire and explosion protection:	Soaked cloths represent fire risk
Storage:	Keep containers tightly closed
Requirements for storage rooms and container:	Store container in a dry and cool place. Avoid direct insolation and over-heating
Instructions for storage:	Do not store together with strong oxidizing agents.

8. Exposure controls and personal protection

Workplace exposure limit (MAK/TRK values):	10 ml/m³ - contains ethylene glycol
Personal protection:	Follow the usual precautions while handling chemicals
General precaution for safety and hygiene:	Consider general rules to workplace hygiene
Respiratory protection:	Only with appearing formation of aerosol
Hand protection:	Only with longer, intensive skin contact
Eye protection:	Wear suitable safety goggles in case of splash
Body protection:	Standard work clothes are sufficient

9. Physical and chemical properties

Odour:	sweet
Appearance:	liquid
Colour:	colourless
Flash point:	> 120 °C
Density: (20 °C)	1,134 g/cm³
Solubility:	water soluble
Viscosity at 20 °C:	22,7 mm²/s

10. Stability and reactivity

Conditions to be avoided:	None with normal use
Materials to be avoided:	Strong oxidizing agents
Hazardous decomposition products:	None with normal handling/storage

11. Toxicological information

In the case of appropriate handling and intended use the product causes, according to the information submitted to us, no unhealthy effects.

12. Ecological information

Mobility:	Nicht in die Kanalisation, Gewässer oder Erdreich gelangen lassen.
Persistance and degradability:	Product is biologically degradable within 21 days to 80.4% (Process: CEC L-33-A-94)
Water hazard class:	WGK = 1(low hazardous to water)

Water-polluting liquid according to § 19 g, paragraph 5/WhG in connection with “General Administration Document about the classification of water-polluting substances in water hazard classes”.

13. Disposal considerations

Suitable disposal process:	Burning in a suitable plant considering the laws and official requirement
Disposal code no.:	14 04 03
Disposal name:	Other solvent and -mixture
Unsuitable packaging:	Empty packaging well, is taken back by supplier

14. Transport information

Land transport ADR/RID and GGVS/GGVE	
trans-border domestic: ADR/RID-GGVS/E class:	no dangerous goods on this note
Sea transport IMDG/GGVSea:IMDG/GGVSea-class:	no dangerous goods on this note
Aircraft transport ICAO-TI and IATA-DGR:ICAO/IATA-class:	no dangerous goods on this note

15. Regulatory information

Classification according to EC-regulations:	labelling required
Hazard symbols:	Xn Harmful to health
R-phases:	R 65: Harmful to health: Can cause lung damage if swallowed
S-phrases:	S 22: Harmful to health if swallowed S 2: Keep out of reach of children S 62: Do not cause any vomiting if swallowed See a physician immediately.
National regulations:	None
Technical regulations:	Class III

Druckschrift-Nr. 94 875/08.10

Service und Information

D HELIOS Ventilatoren GmbH & Co · Lupfenstraße 8 · 78056 VS-Schwenningen
CH HELIOS Ventilatoren AG · Steinackerstraße 36 · 8902 Urdorf / Zürich
A HELIOS Ventilatoren · Postfach 854 · Siemensstraße 15 · 6023 Innsbruck
F HELIOS Ventilateurs · Z.I. La Fosse à la Barbière · 2, rue Louis Saillant · 93605 Aulnay sous Bois Cedex
GB HELIOS Ventilation Systems Ltd. · 5 Crown Gate · Wyncolls Road · Severalls Industrial Park · Colchester · Essex · CO4 9HZ