

Isotherm SP

Installation instructions

General

Isotherm SP is a sea water cooled refrigeration system for sailing yachts and power boats. This unique system means reduced power consumption and noise level. It has no fan or pump. The sea water cooled skin fitting/heat exchanger replaces the air cooled condenser and cooling fan. The heat is transferred directly to the surrounding water instead of being circulated as hot air inside the boat.

Description

The special skin fitting with its integrated condenser/heat exchanger is mounted in the hull and is made of salt water resistant brass with the heat exchanger coil in copper-nickel alloy and replaces the existing skin fitting for the sink drainage.

The connection pipes to the compressor have a length of 1 meter and are equipped with quick couplings. The couplings can be opened and closed without loss of refrigerant. A filter dryer is mounted approx. 20 cm (7¾") above the skin fitting on the return pipe. A 1¼" ball valve should be mounted on the skin fitting.

Important! The hose between the sink and the ball valve shall be a minimum of \varnothing 38 mm (1½"). The skin fitting is normally kept clean due to the constant movement of the water and lack of sunlight. During sailing or motoring the water will flash the fitting and the heat exchanger coil rapidly, which will keep it clean from marine growth. The skin fitting shall be equipped with the zinc anode on the outside and which is included in the delivery.

Operation

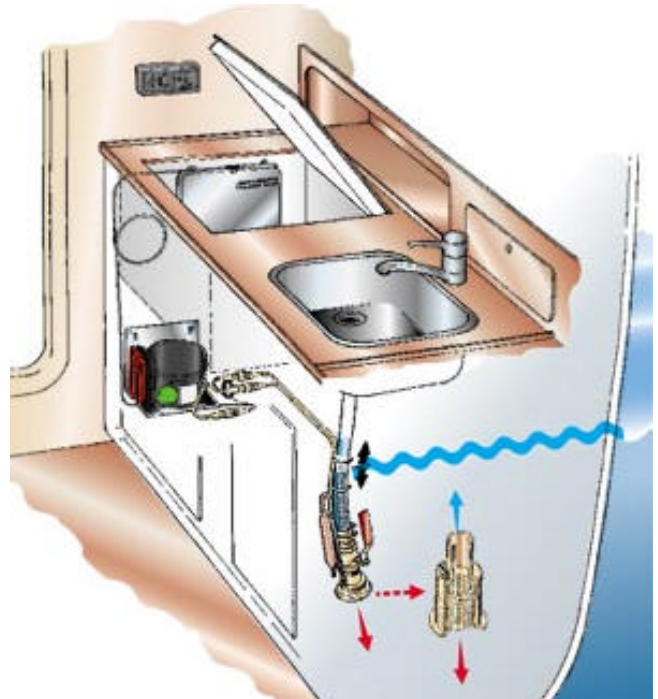
Always keep the ball valve open to ensure a satisfactory function. If the ball valve is closed and the boat is in harbour, the fridge will operate at a reduced cooling level.

During sailing or motoring the fridge will operate better but not to its full potential with a closed valve. When the boat is on shore, the fridge system will operate at a reduced level, in this case the ball valve must be kept open to allow air ventilation through the hose and the sink.

Maintenance

When necessary clean the through hull fitting, don't use sharp or hard tools, a brush will be enough. In a tropical environment, cleaning of the fitting has to be made more often. If necessary, the threaded bottom entrance washer can be removed for better access to the heat exchanger coil.

Corrosion: Galvanic corrosion can often take place on board when the boat is surrounded by salt water and should be carefully checked. This type of corrosion takes place depending on various metals have various current charges. When two different metals are placed under water and connected to each other, electricity will start to run. To prevent metal damages on parts under water, sacrificed anodes made of zinc are installed. Zinc is a less noble metal compared to other materials used and will therefore be sacrificed.



All Isotherm refrigeration units have the plus and minus power supply separated from all chassis parts. Isotherm SP has a skin fitting in direct contact with the sea water and has as standard a zinc anode. The brass in the fitting is dezincification and salt water resistant as well as the Cu/Ni condenser pipes and the soldering silver. The zinc anode on the fitting shall be inspected regularly and replaced as soon as half or more of the zinc is used. If it is affected to a high degree and not lasting more than one season or part of a season, the electrical system on board must be carefully checked to find the reason for the galvanic or leak current corrosion.

Make sure that the refrigeration system is connected to the electrical system in such a way, it cannot be connected to the shore-earth when shore power is connected.

It is recommended to use an insulation transformer in the shore power system, to always be sure, boat and shore earth is separated.

When the boat is equipped with a central bonding plate, the SP skin fitting shall be connected to this with a 6 mm² copper cable. On the skin fitting, there is a M5 hole for this purpose.

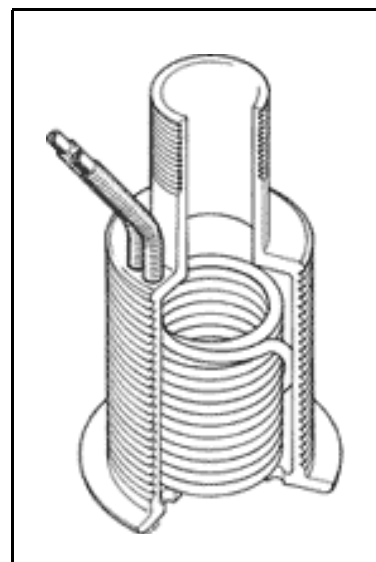
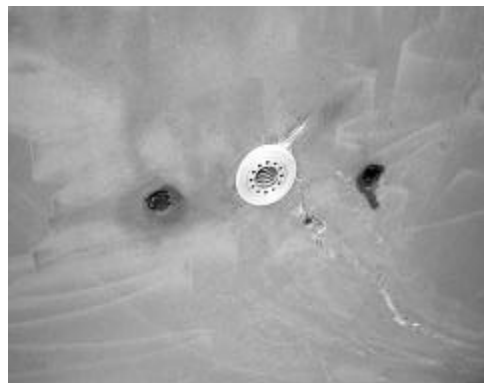
Mounting

First of all, plan the installation!

The skin fitting is to be mounted in the hull instead of existing fitting for the galley sink waste water. The hole in the hull shall have a diameter of 60 mm (2½"). When an existing skin fitting is to be replaced, it is taken away by the following method. Place a wooden plug in the fitting from outside, use a 60 mm (2½") hole saw with a centre drill and cut out the complete skin fitting at the same time as the new hole is made. Put through the connecting pipes and the fitting from the outside, seal carefully using Sikaflex 291 or equivalent. The skin fitting has a 32 mm wrench grip on the inside part for easy tightening of the counter nut. Bend aside the connection pipes to allow the 1¼" ball valve to be mounted, which on the galley sink side shall have a hose serrated tail ø38 mm (1½") hose to be installed. As an option, there is a kit available, consisting of a 1¼" ball valve, ø38 mm (1½") hose adaptor and modification kit for the sink hose connection. Part no. SFD 00008 AA.

Remember to use twin hose clamps below the water line level.

The compressor unit is most likely to be placed in the compartment below the sink, in a suitable distance from the skin fitting, not more than one meter (3 ft.). The compressor shall be mounted horizontally. The bracket allows a choice of mounting positions, standing or bulkhead mounting. The compressor needs to be protected from splashed water or water leaking from the sink at all times.

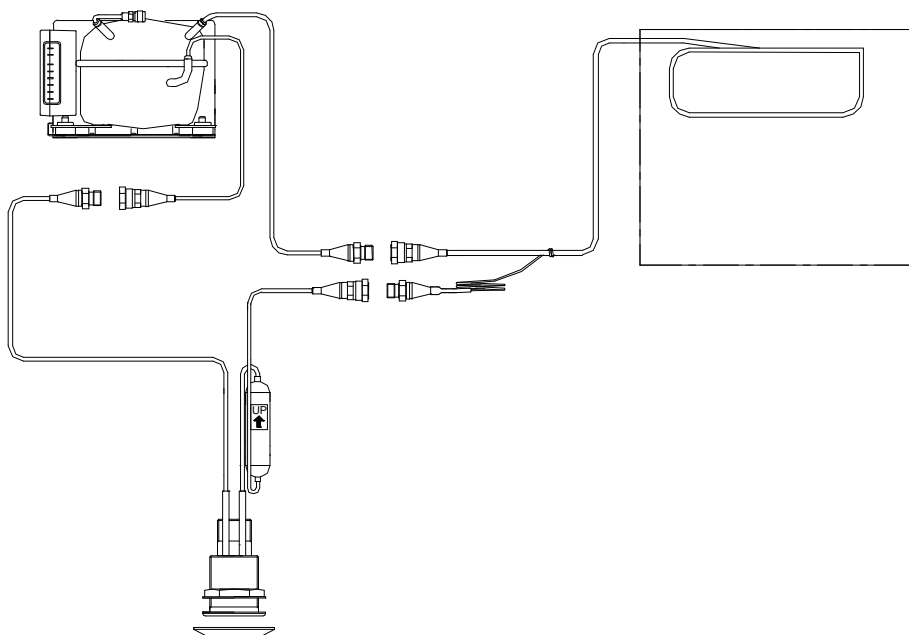


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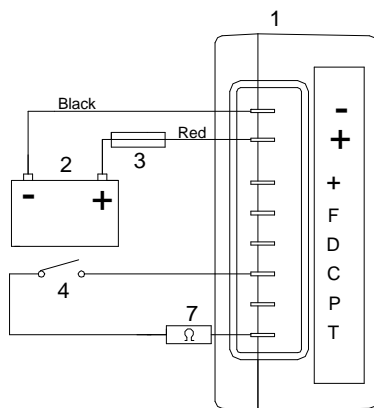
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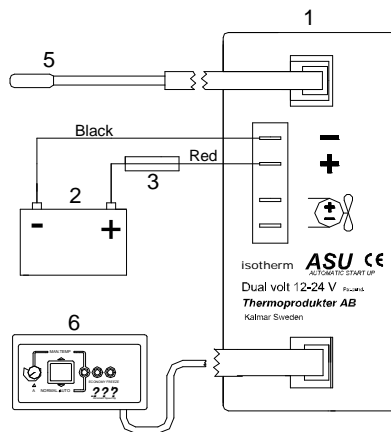
Assembly plan, Bauschema, Schema di installazione, Plan d'ensemble, Monteringschema



Isotherm Compact SP



Isotherm ASU SP



1. Electronic unit, Steuereinheit, Centralina, Électronique, Elektronikenhet
2. Battery, Batterie, Batteria, Batterie, Batteri
3. Fuse, Sicherung, Fusibile, Fusible, Säkring (15A-12V/7.5A-24V)
4. Thermostat, Thermostat, Termostato, Thermostat, Termostat
5. Temperature sensor, Thermistor, Sensore di temperatura, Cateur de température, Termistor
6. Control panel, Schaltpanel, Pannello di controllo, Tableau de contrôle, manöverpanel
7. Resistor, Widerstand, Résistance, Resistenza (Type 2351, 2551, 2050, 2553, 2554, 2555, 2556)