

Installation & operating instructions

Isotherm Cruise & Drawer marine freezers

Type: CR 63F INOX, CR 65F, CR 65F INOX, CR 90F, CR 90F INOX,
DR 55F INOX



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1. Introduction

1.1 General

Isotherm freezers are specially designed to operate in tough marine environments. They are fitted with a fully hermetic, leak-free compressor, they offer the lowest possible power consumption and noise level. All models are simple to install. They can withstand an angle of heel up to 30°, for a short time. To ensure that your Isotherm fridge operates as efficiently as possible, please follow these general guidelines:

- Unnecessary opening of the door will increase power consumption.
- Good ventilation of the compressor and condenser unit will reduce power consumption.
- The electrical system should be in good condition. Inspect batteries and charging levels regularly. Always use a separate starter battery for the engine. Follow carefully the guidelines regarding electrical cable areas and fuse placements.
- Keep the inside of the freezer clean and dry. Remove any water from condensation that may have collected inside the freezer.
- Keep the door slightly open to air the freezer when leaving the boat for any length of time.
- Clean the inside of the freezer with lukewarm water and a mild detergent before taking the freezer into operation the first time.

The freezers are equipped with an evaporator placed in the top and rear of the cabinet.

The DR 55 Freezer INOX has an evaporator unit equipped with a fan for frost free operation.

The INOX models have a more exclusive door in stainless steel and they also have a flush mounting frame for a smooth flat mounting on board. The doors have a stainless steel door lock of a more rigid type and are also equipped with interior trims in stainless steel.

The DR 55 Freezer INOX has the door made as a drawer instead, lower drawer box and door is built together. It has also an upper separate drawer.

1.2 Safety and precautions

For your own and others safety, read this first.



Danger! When connected to mains power, ensure that the power supply is equipped with an earth safety automatic switch, a "ground fault circuit interrupter".



Danger! Never touch bare electrical wiring connected to the AC power supply. Do not use the device if the connector cables show visible damage.

Never connect battery charger direct to the refrigeration system.

A battery charger **must** be connected to the battery, never direct to the refrigeration system.

Danger! In addition to acid, a newly-charged battery contains explosive gas.

Never cover the ventilation openings for the compressor unit.


Refrigerant may never be let out in the air.

Repair of the refrigeration circuit must be done by a certified technician.

1.3 Environmental markings

This appliance is marked according to the European directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.



The symbol  on the product, or on the documents accompanying the product, indicates that this product may not be treated as household waste. Instead it shall be handed over to the applicable collection point for recycling of electrical and electronic equipment. Disposal must be carried out in accordance with local environmental regulations for waste disposal.

For more detailed information about treatment, recovery and recycling of this product,

please contact your local city office, your household waste disposal service or the shop where you purchased the product.



2. Operation

The freezers are equipped with a standard mechanical thermostat except for CR 90 Freezer which has an electronic thermostat.

Temperature regulation are similar for both systems.

The freezers are made for use at ambient temperatures between 32°F and 113°F.

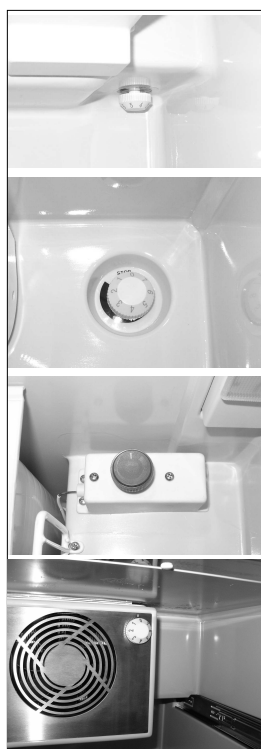
2.1 Temperature regulation thermostat

The freezer is fitted with a manually operated thermostat. This is turned clockwise to reduce temperature and anti-clockwise to both increase temperature and activate the on-off switch at the end position, 0-position. A certain spring resistance is recognized at the off position.

It is advisable to start with the thermostat in a medium position. For maximum storage time of frozen food a suitable temperature in the freezer is 1 to -4°F. Higher temperatures will reduce storage time.

For shorter time periods, 5 to 1°F is acceptable. The ambient temperature influences the temperature also inside the freezer. Avoid direct sunshine and other heat sources close to the freezer.

The thermostat control knob is placed inside the freezer, in the upper part to the right when opening the door.



Alternative positions of the thermostat.

DR 55 Freezer INOX

2.3 User tips

- The freezer compartment is meant for storage of pre-frozen food. It has limited capacity for quick or deep freezing. In case of deep freezing, place the goods as close as possible to the evaporator for best efficiency.

- Start up the freezer if possible 6 - 8 hours before it shall be loaded with frozen food.
- Load the food inside the freezer in such a way, air can circulate to equalize the temperature.
- Do not cover the shelves with glass or paper etc.

2.4 Defrosting

The evaporator is working on freezing temperatures and will form frost and ice from humidity in the air. The humidity increases with higher outside temperature, with storage of non sealed food and the time the door is kept open. Defrosting shall be made when the frost layer is more than 1/8" thick.

Set the thermostat in OFF position or switch off a main switch. Store the goods as possible during the defrosting process.

Do not use sharp metal tools to remove frost or ice.

Do not re-start until the freezer is completely defrosted, cleaned and dried. Empty and clean also the plastic tray in the bottom. Place towels in the bottom of the freezer to collect melt water.

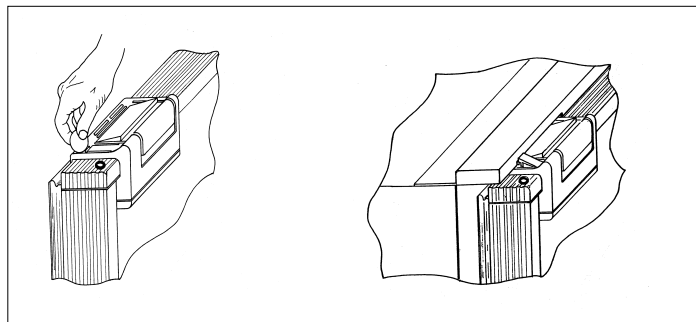
3. Maintenance

The Isotherm refrigeration systems have a fully hermetic closed cooling system and do not require any maintenance or refilling of refrigerant.

The compressor is of mobile type and has a very high efficiency and an outstanding life-time. The freezer shall be left in the boat during the winter. (If the temperature is below freezing point, the compressor may not start).

The maintenance is reduced to periodically, not less than a year, cleaning of the condenser from dust. Use a soft brush and no sharp tools. Keep the cabinet inside clean. Use lukewarm water and a mild detergent for cleaning the inside. Put the doors, during not in operation periods, in their

slightly open ventilation position. Release the catch on the door for this purpose with a coin or a small screwdriver (see fig.) (Not valid for Stainless steel version, "INOX"). Switch off a main switch if there is one installed connected to the freezer power supply to avoid a small power consumption of the electronic unit in its stand by position.



3.1 Battery voltage sensor

To protect the batteries from becoming completely discharged, a battery voltage sensor switches off the compressor automatically at the following levels:

System voltage V	Cut out V	Cut in V
12	9,6 (10,4)	10,9 (11,7)
24	21,3 (22,8)	22,7 (24,2)

If the bridge between C and P is cut off, values within the () are valid.

4 Installation instructions

Many boats have a space which is intended for a freezer. The Isotherm Cruise freezers have been designed to suit the general dimensions normally used for this purpose. The compressor should normally stand upright in the boat, but will operate at an angle of heel up to 30° and for short periods even more.

Avoid mounting the freezer close to a heat source, like gas ovens and heaters. Also avoid a position allowing direct sunshine on the freezer unit.

The mounting position should be dry and protected from splashing water.

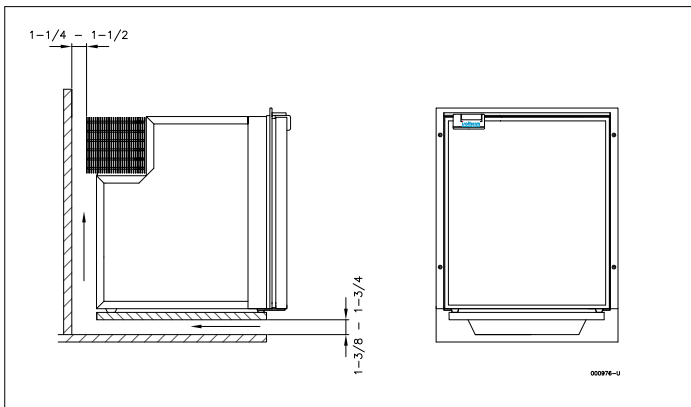
For easier mounting of the freezer, use the mounting rails available as optional equipment, on the models not having three side mounting frame.

The INOX types have flush mounting frame as standard. The freezers shall be standing on the rubber feet and locked in position by means of the mounting frame or mounting rails. When no rails or frames are used the cabinet must be well fastened into the surrounding constructions.

4.1 Ventilation

It is very important that the compressor/condenser unit is well ventilated and that cold air can enter at the bottom, pass behind the freezer and warm air can leave at the top in the area where it is mounted. The natural flow of air from below and upwards behind the freezer can be increased by arranging ventilation openings at the rear.

Make sure there is a free area of 15 - 23 sq.in. below and behind the refrigerator to allow ventilation air to pass behind from below. See fig.



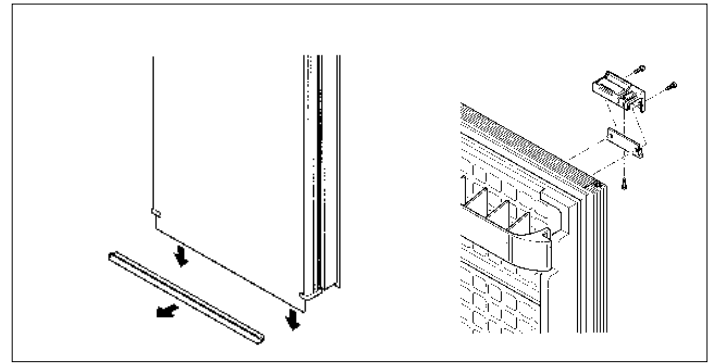
4.2 Door front panel

The front panels on the doors can be replaced or additional standard front panels in white, teak, mahogany or cherry can be mounted on top of the standard panel.

The INOX models have doors in stainless steel and do not have exchangeable door fronts.

Use a screwdriver or a knife as a lever and pull off the lower door profile. Unscrew the three screws holding the door lock.

Mount the extra panel on top of the existing one, fasten the door lock again and push in the lower door profile. See fig.



4.3 Reverse the door hinge

The doors on the freezers are as standard mounted with the hinges to the right hand side.

The door can be hinged to the left by means of changing position of the upper and lower hinge fittings.

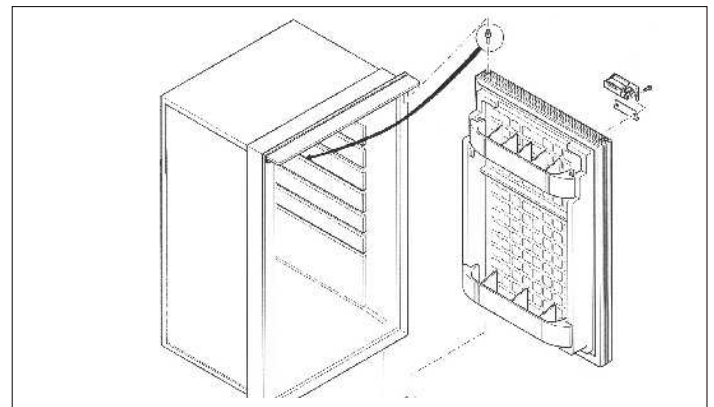
The door lock must also be moved to the other side. See fig. above.

The upper hinge pin is threaded into the top part above the door, unscrew the top part to take off the door and move the pin to the other side.

Or both the upper and lower hinge fittings are screwed into the cabinet and have to be taken off and mounted on the other side instead. The lower door support is also moved to the other side.

CR INOX can also be re-hinged as described above. The door locking is placed in the middle and does not need to be re-positioned.

CR 90 Freezer INOX has left or right doors with side mounted door locks and cannot be changed.



4.4 Electrical connections/wiring

When connecting the freezer electrically, it is important that following points are considered:

Always use cables of sufficient area. The area in the following table should be regarded as a minimum.

- * Always connect the freezer directly to the battery or to the battery main switch on the plus circuit. Do not connect it via the boats own control panel or other diversions as this can cause a voltage drop in the power supply. Use the included fuse holder with a 15A fuse. Use 7.5A fuse in a 24 volt system. The fuse shall be mounted on the plus cable.
- * Connect the red cable to the positive (+) terminal and the black to the negative (-) terminal. Use tab type terminals for the connection to the electronic unit and other cable connectors of sufficient size for the cable size selected.
- * Do not connect the freezer direct to a battery charger. The battery charger must be connected to the battery.

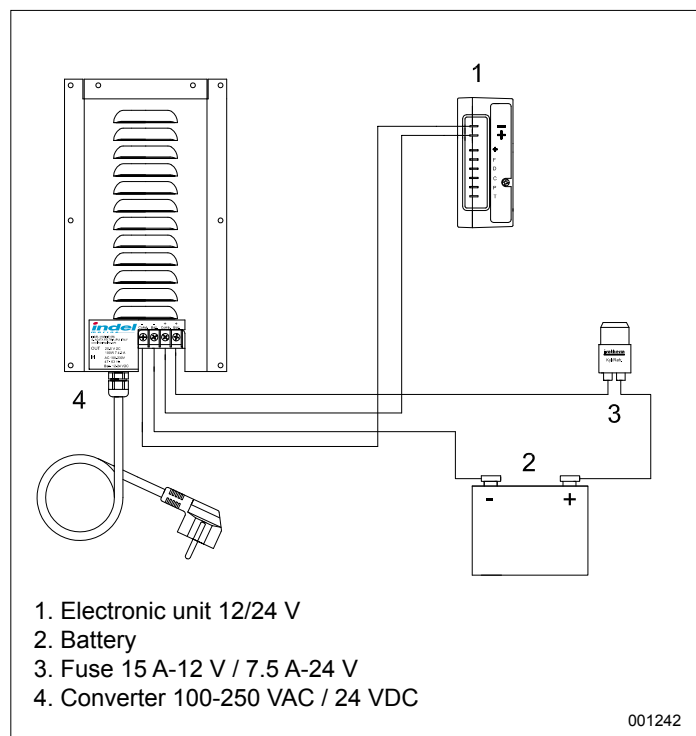
4.5 Wire dimensions

Wire gauge #	Max cable length in ft. 12V	Max cable length in ft. 24V
12	8	16
10	13	26
10	20	39

4.6 Operation with converter

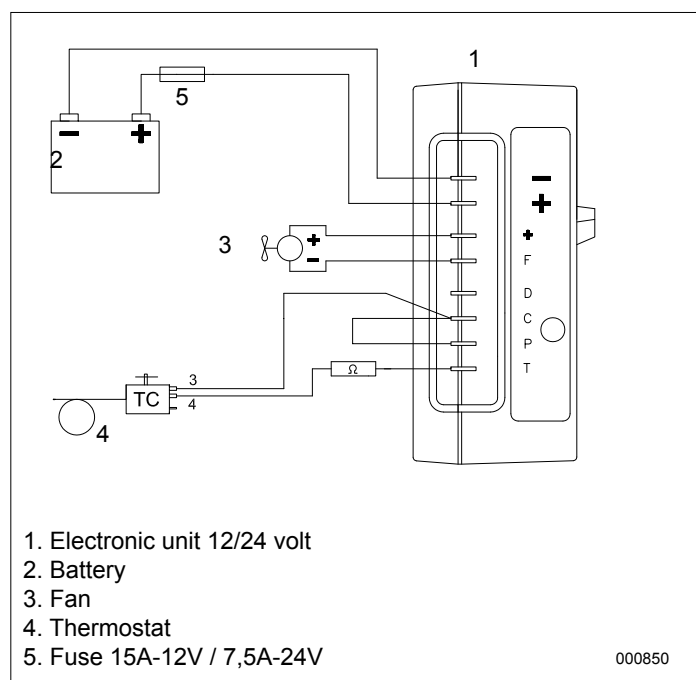
As an option, the freezers can be equipped with an converter which operates on the mains power. It can be mounted direct on the back of the freezer or separately besides the freezer. The converter will feed the power for the compressor direct from the mains as long as this is available, and automatically switch over to battery power when no mains power is available. The converter must be connected to the mains with an earthed power plug.

Wiring diagram converter connection

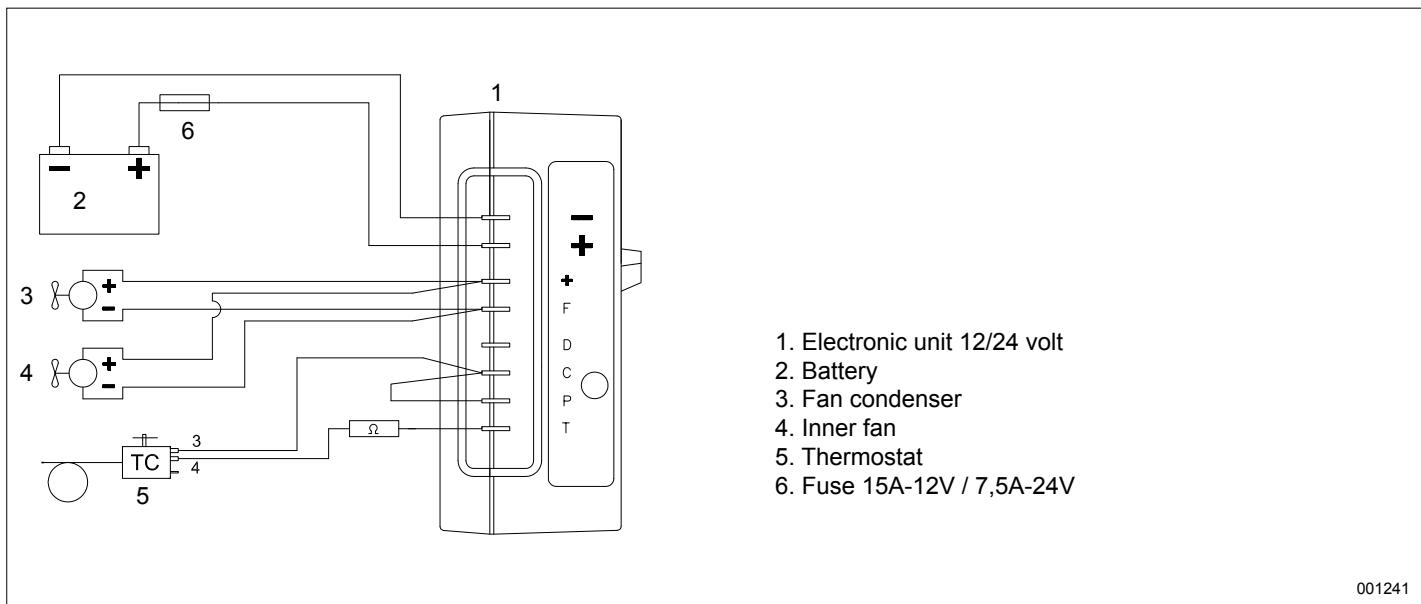


4.7 Wiring diagram

CR 63 F INOX, CR 65 F & CR 65 F INOX

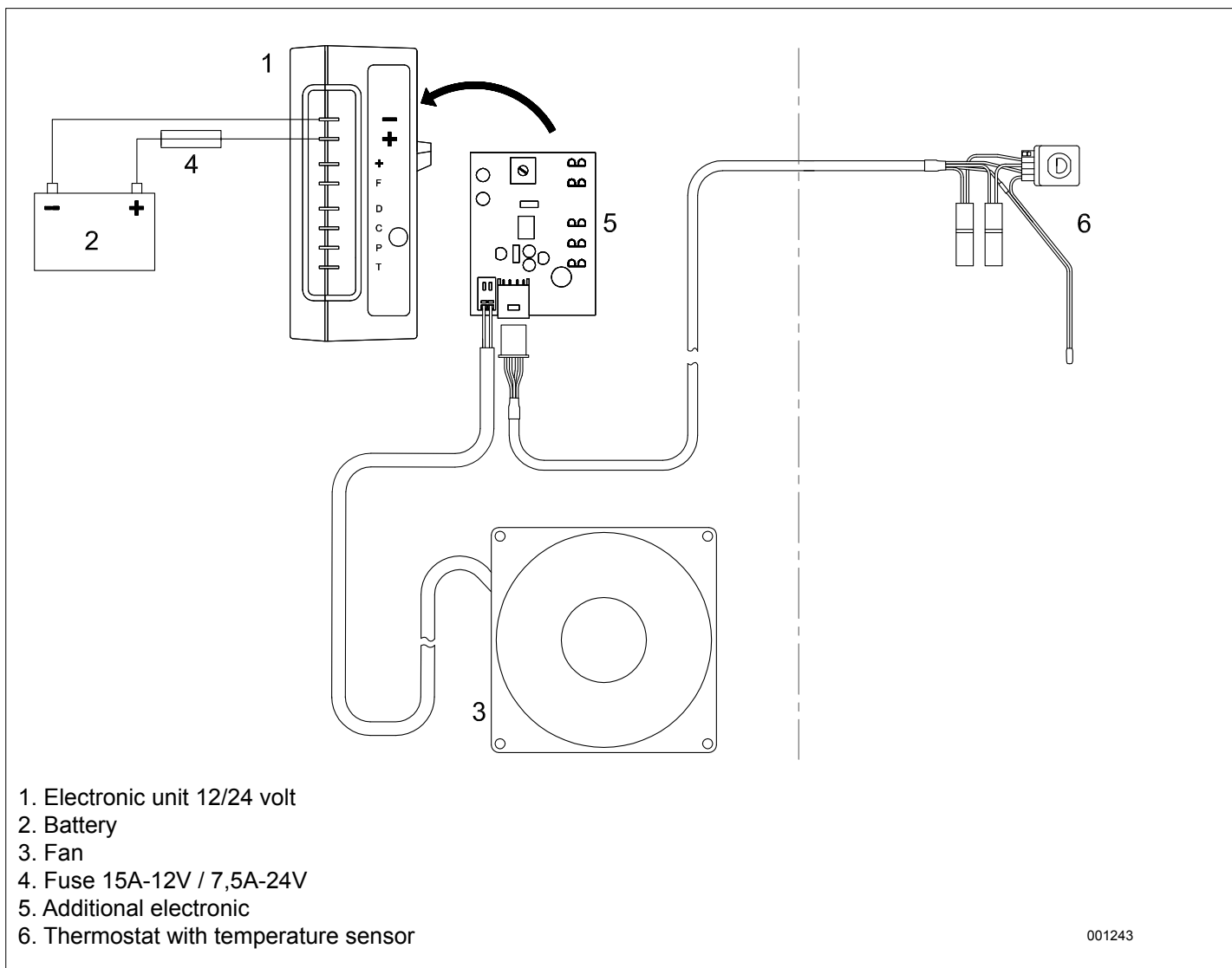


DR 55 F INOX



001241

CR 90 F, CR 90 F INOX



001243

5 Technical data

Voltage	12 or 24 volt DC
Power consumption when compressor is running:	CR 63 F INOX: 5.0 A at 12 V (half at 24 V) CR 65F & CR 65F INOX: 5.0 A at 12 V (half at 24 V) CR 90 F & CR 90 F INOX: 5.0 A at 12 V (half at 24 V) DR 55 F INOX: 5.0 A at 12 V (half at 24 V)
Average consumption:	CR 63 F INOX: 1.5 A at 12 V (half at 24 V) CR 65 F & CR 65 F INOX: 1.5 A at 12 V (half at 24 V) CR 90 F & CR 90 F INOX: 1.9 A at 12 V (half at 24 V) DR 55 F INOX: 1.5 A at 12 V (half at 24 V)

Average consumption measured at -16°C/3°F in the freezer and 22°C/72°F ambient temperature.
The average consumption is much dependent on the way the fridge is used and how well the ventilation is working.

Compressor:	Danfoss BD35F
Refrigerant:	R134a, filling amount is printed on the sticker inside the fridge.
Fuse:	15 A for 12 volt or 7,5 A for 24 volt respectively.

Isotherm refrigerators and freezers fulfil valid EMC directives and are CE-marked.

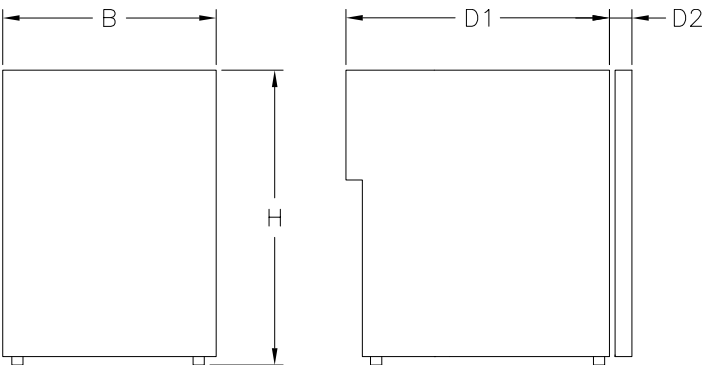


6 Trouble shooting

Fault	Possible cause	Action
Freezer not cold, compressor will not start.	No power supply. Battery in poor condition. Faulty thermostat. Faulty electronic unit.	Check that power is present at electronic unit. Check fuse. Check polarity on connectors and cables. Bridge the thermostat over T-C, see wiring diagram. If compressor starts, this indicates a faulty thermostat. If the compressor does not start, this indicates a faulty electronic unit or compressor. Contact an authorized service agent. A possible leak in the cooling system, contact an authorized service agent.
Compressor makes only short start attempts.	Bad power supply, too low voltage or voltage drop at start attempts. Discharged batteries.	Check cables, terminals and other connections, possible verdigris or corrosion, Clean. Charge batteries, run the engine or connect a battery charger. Voltage must be kept above 11.0 V at start attempts.
Compressor runs but no refrigeration generated.	Loss of refrigerant. Leakage in pipes or evaporator. Pipes blocked.	Pressure and leak test. Check for pipe damages. Repair possible leak, evacuate and re-fill refrigerant. (All this to be made by refrigeration specialist).
Compressor runs long time but not generating enough cold.	Bad ventilation. Condenser too warm. Cooling fan not working Too much frost on evaporator. Door not closing well. Condenser blocked by dust.	Improve ventilation for compressor. Re-place fan. Defrost. Check/adjust door position and door seal. Clean condenser.
Fuse blows.	Wrong fuse size. Faulty electronic unit.	Check fuse, 15 A-12 V / 7,5 A-24 V Exchange electronic unit.

If a complicated fault does occur, such as requiring specialist assistance, please contact Indel Marine USA or your local marine distributor for advice.

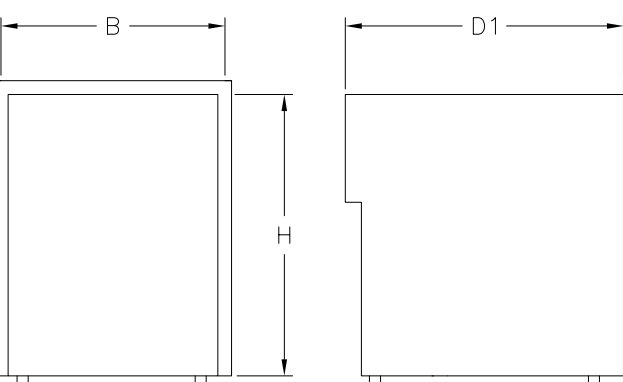
7 Installation dimensions



CR 65 Freezer & CR 90 Freezer

	B *	H *	D1	D2
CR 65F	20-11/16	23-3/4	20-1/8	1-9/16
CR 90F	20-11/16	29-1/3	19-7/8	1-9/16

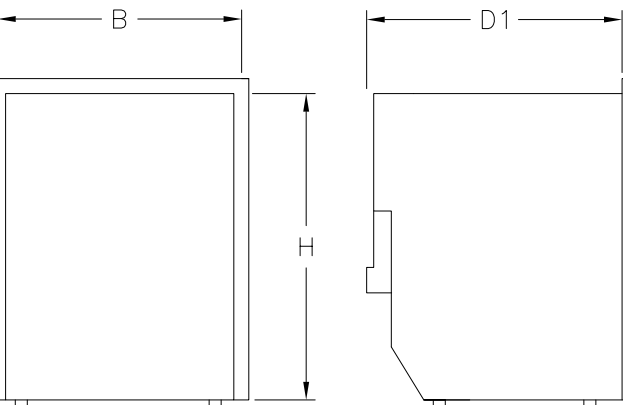
*) B x H = day opening, min dimensions



CR 63 Freezer INOX, CR 65 Freezer INOX,
CR 90 Freezer INOX

	B *	H *	D1
CR 63 F INOX	19-1/2	24-5/8	21-3/4
CR 65 F INOX	21-7/16	24-5/8	20-3/4
CR 90 F INOX	21-7/16	29-5/16	21-3/8

*) B x H = day opening, min dimensions



DR 55 Freezer INOX

	B *	H *	D1
DR 55 F INOX	18-7/16	20-3/4	21-11/16

*) B x H = day opening, min dimensions

More detailed drawings of the freezers can be seen on: www.indelmarineusa.com