



**3100 Series**

**Installation Instructions**

**Operation Manual**

**Troubleshooting guide**



Thank you for choosing Nova Kool for your refrigeration needs.

Since 1985, Nova Kool has been providing quality DC & AC/DC products for mobile, off power grid and energy conscious installations around the world. We are factory fitted in the premium brand RV's and Yachts through-out the western world.

Each unit goes through a battery of tests to ensure strict compliance with our quality policy "Strive for continual improvement of all business processes while involving all associates in the management of quality". Your unit has been run tested at the plant for a minimum of 12hrs, followed by a series of inspections and electrical tests to ensure the quality, the reliability and the safety of your unit.

All Nova Kool units are covered by 12 month parts & labour warranty and an additional 12 months parts only warranty that commences upon delivery of the unit to the end user customer. Please see our warranty terms and conditions on page 14

Please take the time to fill in the information below, unit model and serial number can be found on the inside of your new refrigerator. This will help when making contact for service or warranty information.

Model # \_\_\_\_\_

Serial # \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Date of Delivery of Vessel or Vehicle: \_\_\_\_\_

(Or date of fitting; if applicable)

Selling dealer: \_\_\_\_\_

Nova Kool fridges sold in Australia are warranted by Ocean Solutions International. Nova Kool Manufacturing warranty does not apply to units that Ocean Solutions International distribute.

Please see our warranty terms and conditions on page 14

# Table of contents

1.	Safety .....	..	5
2.	General Safety .....	..	5
3.	Intended Use .....	..	5
4.	Refrigeration Process .....	..	7
5.	Installing & Connecting the Refrigerator	..	10
6.	Installation Notes .....	..	10
7.	Use & Care .....	..	13
8.	Final Notes .....	..	14
9.	Troubleshooting .....	..	15
10.	Warranty .....	..	16
11.	Parts List .....		17
12.	Dimension guide .....		18

# 1 Safety

The manufacturer and distributor accept no liability for damage or personal harm as the result of

- Poor installation
- Incorrect installation
- Incorrect usage, or modifications to the unit.
- Failure of equipment connected to the unit
- Equipment failure as a result of connecting the unit to equipment
- Unit failure as a result of connecting to equipment not designed for connection to the unit.
- Use of the unit for purposes other than described in the manual

## 2 General safety

- Any use of 240volts to power the unit requires a licensed and qualified electrical trades person to fit, modify, or remove the unit.
- 240 volts AC (AC Mains power) can cause serious injury or death.
- 240 volts AC can and does become more dangerous in wet and high humidity areas like marine vessels or during rainy periods.
- Turn off circuit breakers and remove plugs connected to AC Mains power before doing any maintenance or repairs to the unit.
- Do not operate the unit if there is any known, or visible damage.
- This unit may only be repaired by qualified and certified trades people. Poor or inadequate repairs may cause serious hazards or injury.
- Cleaning and maintenance must be carried out by adults only. Children cleaning the unit under supervision of an adult is at the risk of the adult.
- The unit is not a toy. Do not let children play with the unit.
- Do not close yourself or others into a fridge. Can cause death through asphyxiation.

## 3 Intended usage & what to expect.

This unit is non-commercial and non-industrial use. Designed to be fitted within

- Caravan
- Mobile home
- Recreational vehicle
- Boat or pleasure craft.
- Camper Trailer
- Vehicle
- Off grid cabin/hut/villa/shed

The unit is designed to connect to 12v or 24v volt DC systems, and if the optional multi-voltage module is fitted, can be connected to 110v or 240v AC. The system will prioritise AC over DC if the system is connected to both AC and DC power sources.

The units are NOT an environment specific design. The design is based purely on being a Mobile DC fridge/freezer with no intent for it to function as a long storage freezer, or to run in extreme and harsh environments.

The unit will cool or freeze the product within the interior, based on the type of unit purchased.

Fridge only units will cool product down to 1° Celsius at 32° Celsius ambient temperatures.

Freezer only units are holding freezers only and will hold product at -8° to -12° Celsius at 32° Celsius ambient temperatures.

Single door Fridge Freezers units will achieve 1° Celsius. The Freezer temperature is then a balance temperature of with the expectation of -8° to -12° Celsius or lower at 32° Celsius ambient temperatures.

Dual door single compressor Fridge Freezers will achieve to 1° Celsius in the fridge and down to -12° Celsius in the freezer or lower at 32° Celsius ambient temperatures.

Once the unit is at temperature, power usage will vary based on ambient temperature and set temperature of the thermostat. The higher the ambient temperature, the more your unit will work, and the longer it will take to “pull down” to temperature.

You should expect between 40% and 100% cycle time once your unit is at temperature.

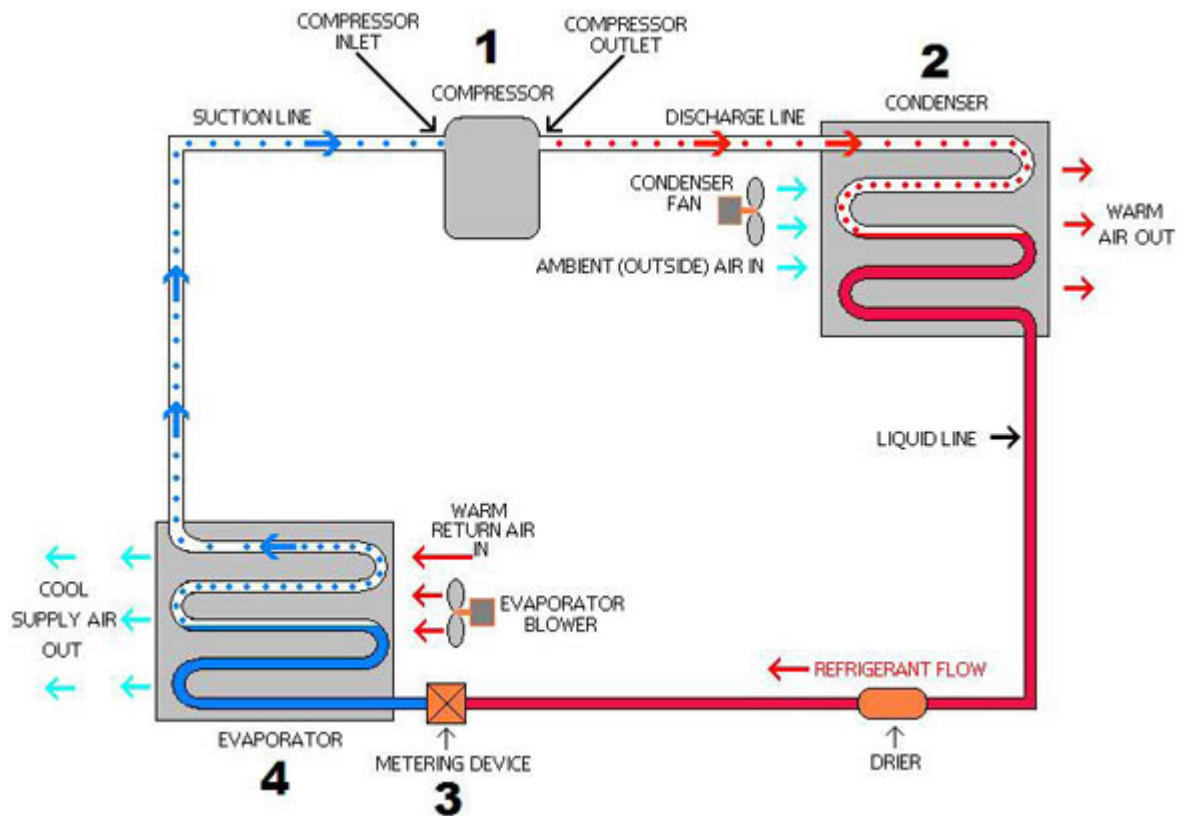
In all units (except for the dual compressor units), the Fridge temperature is what is set by the thermostat. The Freezer area temperature is a “by-product” of the fridge set temperature. It is possible to get extremely cold temperatures in the Freezer in most dual door units, but this will result in sub zero temperatures in the Fridge compartment. This is not a fault, it is a balance or compromise to satisfy either the fridge compartment, or the freezer compartment.

If this manual is missing information on installation criteria, and this leads to a warranty claim, no warranty will be provided. Nova Kool and Ocean Solutions International expect the installation to be carried out by professionals. Information is only provided in an attempt to prevent issues from owner / installers. **Nova Kool and Ocean Solutions International strongly recommend installation by qualified refrigeration technicians, and electricians.**

# 4 REFRIGERATION PROCESS

Refrigeration simplified. The hardest thing for most people to understand is refrigeration is the removal of heat. It is not the cooling of something. This then implies that everything has heat. And this is true for organic objects. ie. Food. There is a lot more to it, but to help understand your refrigerator. (The below is copied from <http://www.air-conditioning-and-refrigeration-guide.com/refrigeration-cycle.html>)

We'll discuss the refrigeration cycle using this cycle diagram.



Component #1 is the compressor.

It takes refrigerant vapor in from the low-pressure side of the circuit, and discharges it at a much higher pressure into the high pressure side of the circuit.

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The compressor is the heart of the system; it keeps the refrigerant flowing through the system at specific rates of flow, and at specific pressures.

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The rate of flow through the system will depend on the size of the unit, and the operating pressures will depend on the refrigerant being used and the desired evaporator temperature.

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Component #2 in this refrigeration cycle diagram is the condenser. The red dots inside the piping represent discharge vapor. The solid red colour represents high pressure liquid refrigerant.

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Most air-cooled refrigeration systems are designed so that the refrigerant will condense at a temperature about 14°C to 17°C above the ambient air temperature around the condenser. Most water-cooled systems are designed for 24°C to 35°C entering condenser water temperature, with 30°C being the design temperature. With water cooled condensers, refrigerant should condense at a temperature about 5°C above leaving condensing water temperature, or 11°C above entering condenser water temperature.

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When the hot refrigerant vapor discharged from the compressor travels through the condenser, the cool air or water flowing through the condenser coil absorbs enough heat from the vapor to cause it to condense.

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If the outside air temperature is 27° C, an air cooled system is designed so that the temperature of the refrigerant, right at the point where it first condenses, will be about 40°C to 46°C. If the entering condenser water temperature is 30°C, a water-cooled system is designed so that the temperature of the refrigerant, right at the point where it first condenses, will be about 40°C.

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Why do we want the refrigerant to condense at this relatively high temperature? So that the air or water flowing through the condenser will be very cold relative to the temperature of the discharge vapor, Which will allow the heat energy in the vapor to move into that relatively cold air or water, And cause the refrigerant to condense.

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At this stage in the refrigeration cycle, high pressure liquid refrigerant will flow down the liquid line, through a filter drier that is designed to prevent contaminants from flowing through the system, and on to the metering device.

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The metering device, component #3 on this refrigeration cycle diagram, is the dividing point between the high pressure and low pressure sides of the system, And is designed to maintain a specific rate of flow of refrigerant into the low side of the system.

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If the wrong capacity of metering device is used, or if there is a problem with the metering device, An incorrect quantity of refrigerant will flow into the evaporator.

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When the high-pressure liquid refrigerant passes through the metering device, its pressure will drop to a low pressure that will be equivalent to about 6°C to 9°C below the design temperature of the evaporator. It starts evaporating immediately, and it wouldn't be too inaccurate to imagine it acting like warm soda when you shake the bottle and pop the top off. It shoots out into the evaporator foaming, bubbling, and boiling, And remember, it's at a low pressure, so for a freezer it would be boiling at about -23°C to -26°C and for a medium temperature refrigerator it would be boiling at about -4°C.

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And that brings us to the evaporator, component #4 in the refrigeration cycle diagram. There will be relatively warm air (or water, if the unit is an ice machine) flowing over the evaporator coil.

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The refrigeration system is designed so that the refrigerant will evaporate in the evaporator at a temperature that's about 6°C to 9°C below the temperature setting if it's a refrigerator or freezer, and the temperature will drop to around -18°C in the evaporator of an ice machine or ice cream machine.

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The system is designed so that the heat in the relatively warm air flowing over the evaporator will move into the cold evaporating refrigerant.

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This process will continue to cool the air that's flowing over the evaporator until it reaches the design set point or thermostat setting.

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So, when you turn on the refrigerator, freezer, ice machine or ice cream machine, the system is designed so that the evaporator will stay colder than whatever it's cooling, and will continuously remove heat from it and cool it.

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The Nova Kool, and in fact all compressor-based refrigeration systems use the same process. Each system then makes minor adjustments to suit their internal and external requirements.

Being a unit that usually gets installed into 4-wheel drives, off-road RV's, Camper-trailers, Caravans, and boats, the fridges are exposed, and subjected to extreme environments as compared to that of a normal refrigerator. Your in-home refrigerator sits still on a flat stable surface, and has lots of controls, moving parts, and hidden evaporators and condensers. It also does not have restrictive ventilation preventing good airflow over the condenser to help remove heat.

As a test, place a thermometer in the cavity behind your Nova Kool fridge while its operating in the middle of the day, and compare the temperatures explained in the diagram to the temperatures on your thermometer.

Nova Kool's internals are designed to be simple, robust and to use natural convection as well as being field repairable. Placing a fan inside the fridge upsets this convection, and your system will fail to perform properly. The internals have also been designed so that parts can be replaced. There are no hidden pipes, controls or wiring which can negate the possibility of a repair. The system does not employ auto-defrost systems. These require a moving solenoid and a way of removing liquid from the compartment. Currently there are no solenoids on the market designed to be bounced around, and using an electrical heater means using more power, and if the electrical controller locks into the on position, the internal of your fridge will melt. (If you have a small old fridge you want to throw out, try placing a 20 watt or 30 watt incandescent bulb (traditional 240 volt light bulb) into the fridge, and leave it turned on with the door shut for a few hours. Make sure you do this in an area that is open, and where a potential fire will not cause harm.)

The external casing (rear) of your Nova Kool fridge, may look "agricultural" and or scratched and dented. These are manufacturing marks The original design parameters were based on recessing the unit into a cavity until the mounting flange is against the timber you are mounting into. The door sits proud of the mounting flange unless the installation design rebates the mounting flange into the cavity. The standard\* black door panel can be replaced with a panel with a colour or design to match your décor. \*(The 1200 series & 5800 series are supplied with brushed stainless-steel panels)

# 5 Installation

Preparation.

- Ensure where you are going to make your cut-out is solid and will cope with the weight of the fridge being mounted to it.
- Ensure the area behind the fridge can have appropriately sized vents cut into the wall or has sufficient ventilation to provide the enough airflow over the condenser. **600 square centimetres is absolute minimum required below the condenser, and 600 square centimetres is absolute minimum required above the condenser. They should be the same size, with the top being permitted to be approx. 10% larger.**
- Ensure the cable sizing, and electric safety's meet the requirements to run your fridge.
- Ensure the position will permit the unit to be as level as possible (upright), permitting an even amount of available "layover/tilt" angle due to van, RV, boat movement.

Nova Kool and Ocean Solutions International recommend you employ a professional to initially fit your fridge to ensure correct operation. If your installation falls outside of the minimal installation parameters, your Nova Kool fridge cannot be expected to function correctly. Nova Kool or Ocean Solutions International are not liable for warranty failures attributed to incorrect and/or poor installation.

**OVER 90% OF ALL WARRANTY CLAIMS ARE ATTRIBUTED TO POOR INSTALLATION. THE MOST COMMON PROBLEMS ARE POOR ELECTRICAL INSTALLATION AND INADEQUATE VENTILATION.**

# 6 Installation Notes

- With vent covers, the holes in the vent covers the square cm size of the holes needs to be calculated, and the number of holes known to be able to provide accurate square cm surface area of the ventilation hole. Sometimes this is provided on ventilation cover packaging. Do not use different sized vents for lower and upper vents as this will create a volume imbalance for airflow.
- Lining the walls beside your refrigerator can, and most likely will cause your refrigerator to condensate heavily. Do this at your own risk. Nova Kool do not recommend lining your walls beside your refrigerator and are not liable for any moisture or water damage caused by normal refrigerator operation.
- Never place additional fan or fans for assisted ventilation on the "air-out" vent, ironically this reduces the air flow as it disrupts natural convection which is how a lower and upper vent function. Should you believe additional fans are required a better location is below your condenser coils to assist in pushing the cooler air from your lower vent over the coils at a faster rate. This may aid in the refrigeration

process by moving the extracted heat from the condenser more quickly. The upper vent should remain unobstructed.

- The ideal area to pull the air into the lower section of your cavity is from the inside of your RV/Caravan/Boat. This is the coolest air, and it can also reduce the dust ingress into the cavity. Dust on the fan and condenser will reduce its efficiency. This will not alter the minimum air in volume; 600 square centimetres of clear air space.
- Fan circulation within the area where the condenser is located, will not improve operation. Air flow through the whole compartment, to ensure cooler air will always be entering the compartment, does assist.
- On certain days, the ambient weather may cause your unit to condensate. (Casing and mounting frame) This is normal in high humidity conditions.
- When temperatures exceed 38° C, the unit's performance may begin to deteriorate. This is because the heat transfer from the condenser to the air will become less efficient as the temperature increases. Heat will also penetrate the walls of the refrigerator more.

### Electrical Cable Sizing

Cable size in MM <sup>2</sup>	12vDC Max. Cable Length	24vDC Max. Cable Length
4	4	6
6	8	10
10	12	14

The above cables are length in metres. We strongly recommend that the smallest cable used for lengths shorter than 4 metres is 4mm<sup>2</sup>, with a preference to only using 6mm<sup>2</sup> cable.

#### CRITICAL NOTES:

- **Never join to the provided DC tails on the module. These are to show you which is positive, and which is negative. Never create a join in any incoming cable.**
  - **Always use the correct size lug for your cable and solder the lug after crimping.**
  - **Avoid joins in your cable. If you cannot, make sure any join is properly soldered and insulated.**
  - **Use a direct cable run from your main switchboard. Do not connect other cables to fuse/breaker.**
  - **Make sure power source cable matches the above table, and that the feed to your main board/breaker is sufficient for all your connections.**
  - **In dual compressor systems, always run 2 (two) separate power source cables from fuse/breaker box with a separate fuse/breaker for each compressor.**
1. Mark up and prepare to make your cut-out. **DOUBLE CHECK THE DIMENSIONS. USE THE DIMENSIONS ON PAGE 18 AS A GUIDE ONLY. CHECK THE DIMENSIONS YOURSELF SO YOU DO NOT MAKE INCORRECT CUTS. WE WILL NOT BE RESPONSIBLE IF THE DIMENSIONS ARE INCORRECT.** Your model details will be on the label on the inside of your fridge, it is located on either the upper left or upper right side of the

walls. This is also where you can find your serial number. You should note these down in this manual and keep this manual handy.

2. Check the sizes on the chart match closely the size of the refrigerator. You should expect approx. 5 mm difference in size on the chart to the external dimensions of the fridge box. Measure 2, 3, or more times, and recheck before making your cuts. (Nova Kool is not liable for incorrectly measured cut-outs resulting in difficulties in being able to install your unit).
3. When cutting out your ventilation holes, ensure there are no structural beams or electrical cables where you are making the cut. Make sure the ventilation holes are of sufficient size to allow the fridge to breath properly. (Nova Kool is not liable for incorrect /inadequate ventilation or holes cut in the incorrect position)
4. When running the power supply cable from the battery to the rear of the fridge compartment follow the shortest possible route. Ensure there is enough cable for you to connect the refrigerator when the unit is external to the cavity. Ensure that you have a fuse fitted very close to the battery, no more than 15 cm from the battery terminal. (Nova Kool or Ocean Solutions International are not liable for incorrect or poor electrical wiring in your installation)
5. Ensure the fuse is out in your wiring and your wiring is not connected to the battery.
6. Connect the refrigerator side of your power supply cables to the refrigerator electrical terminals, located on the electronic control module (ECU).
7. Place refrigerator into the cut-out, ensuring not to pinch or jam the cables.
8. Screw the refrigerator into the cut-out by fixing the screws at an angle slightly pointing away from the refrigerator, in the screw holes in the mounting flange, and tighten the screws to hold the refrigerator firmly in place.
9. Look through your ventilation holes and ensure all your cables are clear of any obstruction points, and all cable connectors are firm. It is advisable to loop your power input cables above the ECU and cable tie the loop so that there is no downward pressure on the power supply input cables (vibration and downward weight pressure when travelling can loosen and sometimes disconnect your cabling from the ECU terminals which results in a non-powered appliance.
10. Fit your ventilation covers as per the ventilation covers instructions.
11. If you have a mechanical thermostat, open the refrigerator door, and turn the thermostat dial to "0"
12. Connect the cable to the battery, and place the fuse into the fuse holder
13. Open your refrigerator door and turn your thermostat to between '3' and '4'. For double door units we recommend a starting point of '4.5' on the thermostat.

Your refrigerator will now be running and starting to cool down. This can take several hours, and best to leave over night to allow the temperature to settle. It's a good idea to have a thermometer (Or better still, a temperature and humidity data logger) sitting on the bottom shelf and read it in the morning. This will assist you in setting the correct temperature of your refrigerator.

**IMPORTANT: IF YOU ARE UNCLEAR ABOUT ANY OF THE TERMINOLOGY OR INFORMATION PROVIDED HERE, SEEK A PROFESSIONAL TO INSTALL YOUR FRIDGE UNIT.**

## 7 Use and care

While your Nova Kool unit is quite simple, the following will assist you getting the best performance of your unit.

- Remove the drip tray at the top of unit. Tests have shown up to a 5 degrees Celsius higher temperature in your fridge cavity if you leave it in.
- Do not let ice build-up on your evaporator. This can give erratic performance and can cause the compressor to cut-out when it should be running and visa-versa.
- Check door seals regularly. If you have a faulty door seal, or the door is not sealing properly, then ice build-up on your evaporator will occur much more quickly.
- Clean your fridge only using warm water with baking soda. **DO NOT USE ANY OTHER CLEANING PRODUCT.** It can cause your lining to go brittle or discolour.
- **Plan ahead.** Turn your unit on several days prior to travelling to let the unit come down to temperature. The units are not a domestic fridge, where you put kilos of room temperature food into the fridge to cool it down. Remember the more food you put in there at ambient temperatures, the more power it will use and the longer it will take to bring all your warm food down to temperature.

### **Temperature Control Device - Mechanical thermostat.**

The mechanical thermostat is a "contact" type, and you will see it attached to the evaporator. These are like the original type of temperature controllers used for years in the first types of fridges.

There is a large dial with a mark, and an indicator point on the body it is mounted in, to provide a reference to the 7 numbers on the dial.

The numbers reference 1 as being the warmest set point, and 7 being the coldest. If you wind it around to 0, this will tell the unit to "turn off". Turning it around to 7 will tell the unit to just keep running.

The position will effectively tell the unit to stop at a certain temperature that the evaporator will get to, not the air temperature of the cavity. If it is a very hot day, and the fridge is not keeping things as cool as you would like when compared to a normal temperature day, turning the thermostat to higher positions will not help. The compressor will already be running all the time. Once ambient temperatures get over about 38 degrees Celsius, you can expect this to happen.

The challenge with mechanical thermostats is variables. There are some very expensive ones available, but they suffer the same issue. There are variances with the position, as to what temperature you will receive.

Some fridges will run at 1 degree Celsius in the fridge at position 3, while an identical unit right beside it will require position 4.5 to achieve the same.

We would suggest with these units you start at position 4.5, and place a thermometer in the fridge, sitting it on crisper shelf. Keep in mind that the colder you run your fridge area, the colder your freezer will be.

### **Strong recommendation:**

When travelling we suggest you always carry a spare thermostat and a spare fan, or if travelling in dusty conditions carry 2 spare fans. These are what we consider consumables and are simple to change and can keep you on the road. We can assist with diagnosis of your fridge if you are facing some challenges and when to replace these parts.

## **8 Final Notes**

Being refrigeration there are many other contributing factors to issues. We have only covered the simple ones we get lots of calls about. Most issues are easily resolved, and a lot of the queries are more an understanding of mobile fridges. These units, while in theory, may be similar to your home unit, once put into a mobile “tin can” that conducts heat, and has limited ventilation, and subject to bouncing all over the road or dirt track, completely changes the functioning dynamics. Throw into the mix, that everyone wants larger internal volume and minimal room to fit it all in, ALL manufacturers reduce the wall thickness insulation to try and maximise internal volume, at the expense of heat ingress.

We are always happy to discuss issues you may be experiencing, but unfortunately sometimes we just can't alter the laws of physics.

The Nova Kool fridges are not designed to work efficiently at temperatures above about 38 degrees Celsius. They will continue to try and cool, but with the level of heat ingress through the insulation, the system may struggle to keep up. The warmer it is above these temperatures the less efficient the system will become.

Currently we are unaware of any mobile/portable fridge that will work efficiently in these high ambient temperatures. By designing a fridge to work at these higher temperatures, then they will cause problems at lower temperatures. (Freezing of foods, unstable running temperatures, short cycling etc)

The Nova Kool unit will provide many years of trouble-free cooling, with minor repairs such as thermostat failure, or internal light failure (if fitted), or replacing door seals; if correctly

fitted, and properly looked after. Parts are usually available, if required, out of our Brisbane warehouse, and our team are happy to assist, as well as help with advice and information in resolving most issues.

We hope you enjoy your fridge.

The Ocean Solutions International Team.

## 9 Troubleshooting

Symptom	Reason/Solution
Unit is running all the time  *-If the section of the evaporator plate holding the thermostat tube isn't lightly frosted the thermostat tube will be sensing incorrectly.	-Evaporator has excessive ice, defrost unit to remove ice. -Condenser is not removing enough heat. Check condenser cooling is sufficient. -Fan is not working. Replace fan. -Faulty thermostat. Replace thermostat *- Have a refrigeration technician investigate the possibility of a refrigerant leak.
Fridge not running	-Fan is sticky or stiff. Replace fan -Voltage too low. If battery voltage <b>at the compressor module</b> is less than 9.6 volts at startup, it will not start. -Check your DC power system. -Check that a connection or cable has not come loose
Fridge not getting cool enough	-Thermostat is set to low. Turn the thermostat to a higher number. (if at 3 try at 3.5) -Ambient temperature is high. Open the fridge door less, and try to improve colling over the condenser. -Door not sealing properly. Fix door or replace door seal.
Evaporator icing up	-Door is being opened too often. Always limit the number of times you open the fridge door. -Door not sealing. Too many heavy products in the door during travel, or the door is being leaned on when open. Re-adjust the door to seal. -Door seal split or damaged. Replace door seal. (During humid times, the icing up will occur more quickly. Ie. If you are in Northern Australia during the wet season, expect to defrost weekly)

# 10 Warranty

Nova Kool Mfg. Inc. warranties products as follows:

## One (1) year parts and labour

- ✓ From the date the end user purchases the Nova Kool unit or the date of purchase of the boat/RV/caravan which has a new Nova Kool unit installed in it. **Proof of sale/purchase is required.**
- ✓ All parts are supplied by Nova Kool Mfg Inc. or it's agent, by Marine Import Sales Group Pty Ltd T/A Ocean Solutions International
- ✓ Authorisation for warranty **must** be given by Marine Import Sales Group Pty Ltd T/A Ocean Solutions International for all labour claims.
- ✓ **The Multi-voltage module – This is an option and only 3 months warranty shall be provided for this type of module.**

## Second (2<sup>nd</sup>) year 'Parts' Warranty only

- ✓ Nova Kool will warranty all parts for an additional year after the first (1<sup>st</sup>) year parts and labour warranty, with the exception of the Multi-voltage module. (As stated above)
- ✓ Parts are supplied at no charge; freight is an additional charge to customer.
- ✓ All parts are FOB by Marine Import Sales Group Pty Ltd T/A Ocean Solutions International.

## Warranty – 1<sup>st</sup> & 2<sup>nd</sup> year (general information)

- ✓ All claims must be submitted in writing noting the model and serial number of the unit you are requesting warranty on, to Nova Kool/Authorised Distributor. (For claims where the Authorised Distributor has not contacted the service agent to request warranty work to be performed)
- ✓ For labour claims which are over one (1) year (12 months) from date of sale or on parts claims which are over two (2) years (24 months) from date of sale, an official proof of sale/purchase/invoice must be supplied to Marine Import Sales Group Pty Ltd T/A Ocean Solutions International before warranty will be considered. Claims outside of the warranty period as stipulated above will be assessed on a case by case basis and any decision will be made at the discretion of by Marine Import Sales Group Pty Ltd T/A Ocean Solutions International

**Service parts** carry a one (1) year warranty from the date of sale, with the exception of the Multi-voltage module. (As stated above) No labour or freight is allowed.

**All fridges returning for repair** must have a **RGA** (return goods authorised return) email, which can be requested by calling by Marine Import Sales Group Pty Ltd T/A Ocean Solutions International.

## Warranty - general terms & conditions

1. Warranty is for manufacturing defects only. This does not include poor performance as a result of poor insulation.
2. All warranty claims must be directed to the original place of purchase. We will not process warranty claims unless they are through the original reseller.
3. No warranty job is to proceed without an \*Authorisation email from Marine Import Sales Group Pty Ltd T/A Ocean Solutions International. Failure to do so will have the claim rejected, and all payments to the service provider will be at the fridge owner's expense.
4. Not all warranty claims are warranty, and the decision is up to the manufacturer and/or their agent. The repairer is not the manufacturers agent, Ocean Solutions International are the Australian agents.
5. If inspection and/or repairs are made and the claim is found to not be a valid warranty claim, the end-user is liable for all costs incurred and will be invoiced by the repairer.
6. If the unit is found to be functioning within parameters when tested external to the vehicle, but fails to function properly within the vehicle, this is not a manufacturing fault of the fridge/freezer and therefore not a valid warranty claim.
7. The repairer has the right to hold the fridge/freezer until payment has been made in the event the repair is not warranty.
8. All repairs that are started or completed without our authorisation; all repairs are at the cost of the fridge/freezer owner, and no re-imburement claims will be honoured by Nova Kool or Ocean Solutions International.

**Note:** In this document the references made to '**Authorised Distributor**' are to be considered to be the **Australian Distributor** of the NOVA KOOL product range; being **Marine Import Sales Group, T/A Ocean Solutions International.**

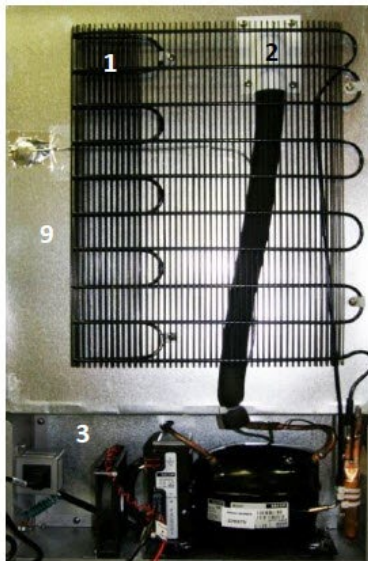


## Nova Kool R3100DC Series Parts List



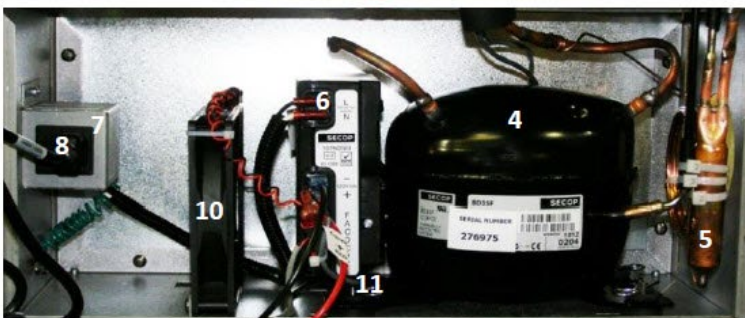
### Front View

- 1) Frame 31 c/w frame screw (12), frame gasket
- 2) Door 31 c/w , bottle bar, door gasket 31, door pad 31, panel (black) \*Not Shown\*, door rod, egg rod, hinge bearing
- 3) Hinge Assembly c/w hinge left, hinge right, hinge pin (2), hinge screw (12)
- 4) Thumb Latch c/w thumb latch, latch pin, latch tension
- 5) Shelf 31 c/w shelf clips (2)
- 6) Thermostat/Light Assembly c/w thermostat, thermostat knob, wire 45 (grey), light switch, light, light wire
- 7) Evaporator 31 c/w capillary tube, suction line, armaflex
- 8) Drip Tray 31
- 9) Freezer Door 31 \*Shown Open\*
- 10) Shelf 23 c/w shelf clips (2)
- 11) Latch 75 c/w male & female ends, screws (4)
- 12) Accessory Bag c/w ice cube tray, manual, mounting hole plugs (4)



### Back View

- 1) Condenser 31 c/w mounting clips & screws
- 2) Pipe Cover
- 3) Base 23 c/w screws
- 4) bd3.5f Compressor c/w rubber feet (4), compressor clip (4)
- 5) Fridge Drier
- 6) Electronic DC
- 7) AC Receptacle c/w fuse 4, wire harness
- 8) AC Cord 115 optional 220
- 9) Cabinet 31
- 10) Fan Assembly c/w fan12, fan bracket
- 11) Speed Resistor (Optional) No resistor=low speed, black resistor=medium speed, red resistor=high speed



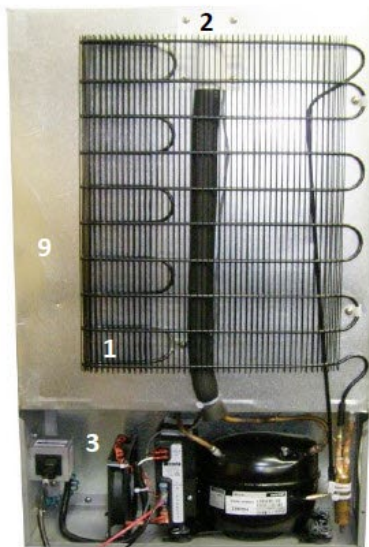
**Base Expanded View**

## Nova Kool F3100DC Series Parts List



### Front View

- 1) Frame 23 c/w frame screw (12), frame gasket
- 2) Door 23F c/w door gasket 23F, door pad 23F, hinge bearing, panel (black) \*Not Shown\*
- 3) Hinge Assembly c/w hinge left, hinge right, hinge pin (2), hinge screw (12)
- 4) Thumb Latch c/w thumb latch, latch pin, latch tension
- 5) Shelf 23 c/w shelf clips (2)
- 6) Thermostat Plus c/w knob, case, wire 45 (grey)
- 7) Evaporator 31 c/w capillary tube, suction line, armaflex
- 8) Latch 75 c/w male & female ends, screws (4)
- 9) Accessory Bag c/w ice cube tray, manual, mounting hole plugs (4)



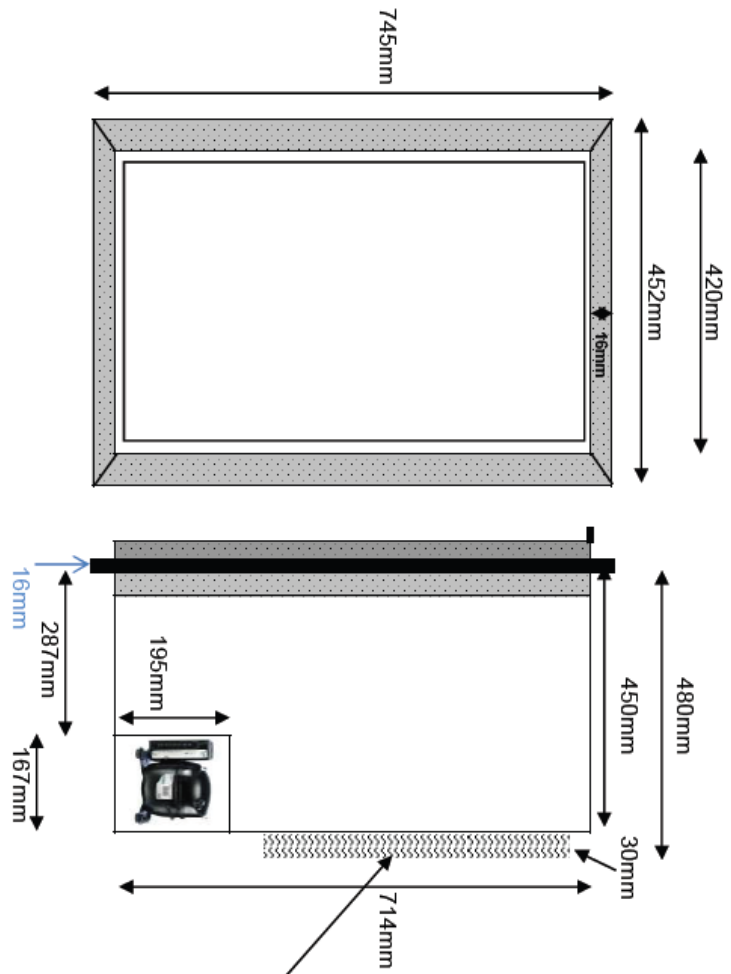
### Back View



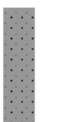
- 1) Condenser 31 c/w mounting clips & screws
- 2) Pipe Cover
- 3) Base 23 c/w screws
- 4) bd3.5f Compressor c/w rubber feet (4), compressor clip (4)
- 5) Fridge Drier
- 6) Electronic DC
- 7) AC Receptacle optional c/w fuse 4, wire harness
- 8) AC Cord 115 optional 220
- 9) Cabinet 31
- 10) Fan Assembly c/w fan12, fan bracket
- 11) Speed Resistor (Optional) No resistor=low speed, black resistor=medium speed, red resistor=high speed



### Base Expanded View

# 12 DIMENSIONS - GUIDE ONLY



- R3100**
-  = Mounting Flange
  -  = Flange
  -  = Door

**Cut Out**

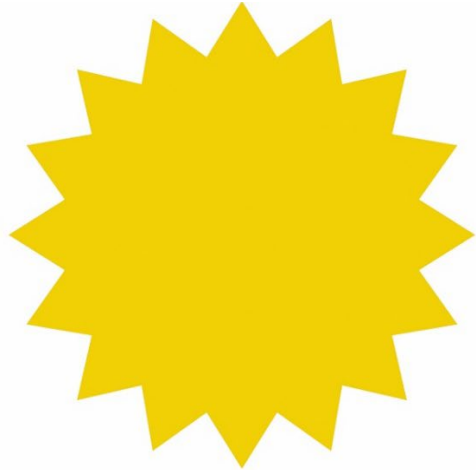
(H)	721mm
(W)	427mm
(D)	495mm

Condenser Coil

E&OE

Please note: Drawings are not to scale and are intended to provide dimensional information only.

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