

DC REFRIGERATOR



At home out there

RL50



Compressor Refrigerator
Installation and Operating Instructions

Thank you for choosing our refrigerator. Please read these instructions carefully before installing or using the refrigerator for the first time and store them in an easily accessible place for future reference. If you transfer or sell the refrigerator, please pass on these instructions to the new owner to ensure they are aware of the installation methods, usage, and safety requirements.





To enhance the performance and reliability of the refrigerator or its components, adjustments to the hardware or software may be made. If there are any discrepancies between these instructions and the actual refrigerator, please refer to the actual refrigerator, failure to do so may significantly affect your use of the product.

Table of content

1.0	Explanation of symbols	1
2.0	Safety instructions	1
3.0	Intended use	3
4.0	Disposal	3
5.0	Warranty	4
6.0	Product components	5
7.0	Installation and connection	6
7.1	Overall dimensions	6
7.2	Recess dimensions	7
7.3	Connecting the refrigerator to DC power supply	8
7.4	Reversing the door	9
7.5	Fixing the refrigerator	11
8.0	Using the refrigerator	12
8.1	Operating controller	12
8.2	Fault alarm	14
8.3	Defrosting	14
8.4	Removing the shelves	15
8.5	Storage	15
9.0	Cleaning and maintenance	16
10.0	Technical data	17
11.0	Wiring diagram	17
12.0	Troubleshooting guide	18
13.0	Spare parts list	19

1.0 Explanation of symbols

Be aware of possible safety hazards when you see the safety alert symbol on the refrigerator and in this manual. A signal word follows the safety alert symbol and identifies the danger of the hazard. Carefully read the descriptions of these signal words to fully know their meanings. They are for your safety.

- | | |
|---|--|
|  DANGER! | Failure to observe this instruction can cause dangerous personal injury, death, or much property damage. |
|  WARNING! | Failure to observe this instruction can cause personal injury or much property damage. |
|  CAUTION! | Failure to observe this instruction can cause material damage and impair the function of the product. |
|  NOTE | Supplementary information for operating product. |

2.0 Safety instructions

- Only use the refrigerator for purposes described in the instructions.
- The refrigerator must be installed correctly under the guidance of the instructions before using.

DANGER!

- This appliance contains isobutane refrigerant R600a, it is combustible. Risk of Fire and explosion.

Flammable Refrigerant



- When handling, installing, moving and use the appliance, care should be taken to avoid damage to the refrigerant tubing and refrigerant circuit.
- Do not use the area behind the refrigerator to store anything, especially flammable materials (gasoline, cleaning supplies, etc.)
- Never open or damage the refrigerant circuit of the cooling system at the back or the inside of your appliance. The cooling system is pressurized and contains flammable substances.
- Keep ventilation openings in the appliance enclosures or in the built-in structure, clear of obstruction, clear of obstruction. Have the condenser and cooling fan cleaned by qualified service personnel if you suspect poor performance.
- Do not use mechanical devices or other means, such as candles or heaters to accelerate the defrosting process.
- Do not use electrical appliances inside the food storage compartment of the appliance.
- Do not store any explosive substance, such as aerosol cans with flammable propellant, in this refrigerator.
- Do not store substances which are caustic or contain solvents.

- Never use the refrigerator in an environment where flammable gases are present.
- Do not place the refrigerator near naked flames or other heat sources (heater, direct sunlight and gas over etc.)

WARNING!

- Incorrect installation, adjustment, change to, or maintenance of this refrigerator can cause personal injury, property damage, or both. Have service and maintenance work done by your dealer or by an authorized Service Center.
- The rear and bottom of the refrigerator has sharp edges and corners. To prevent cuts or abrasions when working on the refrigerator, be careful and wear cut resistant gloves.
- A circuit overload can result in an electrical fire if the wires and/or fuses are not the correct size.
- Inadequate repairs may cause more serious hazards.
- Do not operate the device if it is visibly damaged.
- Disconnect the DC power source before doing any maintenance work on the refrigerator, such as cleaning or repairing.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- Operating, cleaning and user maintenance must not be carried out by children without supervision.
- Danger of crushing! Do not put your fingers into the hinge.

CAUTION!

- If the power cable of the device is damaged, it must be repaired and replaced by qualified technician immediately. Any cable, plug or connecting point with a crack or any abrasions, must not be used as to avoid any potential safety hazards.
- The temperature of the space where the refrigerator is placed should not exceed the range specified on rating-label of the refrigerator, otherwise it will lead to refrigerator failure and food deterioration.
 - * **The temperature is around the refrigerator, it is not the ambient temperature of the vehicle.**
- Do not bypass or change the refrigerator's electrical components or features.
- Do not use a modified plug or self-prolonged cable.
- Do not spray liquids near electrical outlets, connections, or the refrigerator components.
- Disconnect the DC power supply if you do not intend to use the refrigerator for an extended period of time when it is installed in caravans, motorhomes and on boats.

3.0 Intended use

This refrigerator is made for use within a recreational vehicle. As such, it is suitable for installation in caravans, motorhomes, boats, but do not expose the refrigerator to rain.

This refrigerator is made to store fresh and frozen foods and for making ice.

CAUTION!

- If the refrigerator is only suitable for installation in a fitted cavity. Once it is installed, only the front of the device is accessible.
- The device is designed to be operated with 12V DC supply.

NOTE

- The upper section is the freezer compartment, the lower section is the fresh compartment.
- The refrigerator is only suitable for refrigerating, freezing and storing food, but not for medicine or medical storage.
- Please check if the refrigeration capacity of the refrigerator is suitable for storing the food you wish to cool.
- All materials used in the refrigerator are compatible for use with foodstuffs. The refrigerant circuit is hermetically sealed and CFC-free.
- The refrigerator can withstand a short term inclination of 10° , for example on boats.
- The temperature of refrigerator compartment can be adjusted by control panel.

4.0 Dispose

When the refrigerator has reached its end of life, flammable refrigerant and insulation material used require special disposal procedures, dispose the product according to the local Government stipulations.

- Do not dispose the refrigerator with normal household waste.
- Take off the doors. Leave the shelves in place before you throw away your old appliance, so that children may not easily climb inside.



Environmental Protection

Discarded electrical appliances are recyclable and should not be discarded in the domestic waste! Please actively support us in conserving resources and protecting the environment by returning this appliance to the collection centre's (if available).

5.0 Warranty

- The warranty period is one year from the date of purchase.
- This warranty does not cover glassware, electric light bulbs or replaceable fuses, and does not apply to refrigerators or component parts that have been subjected to misuse, improper installation, abnormal service, transit damage, recharging of cooling unit system, accident, fire, improper repair, tampering or abuse.
- The responsibility under this or any warranty is limited to the repair or replacement of defined defective refrigerator or component part. In no event and under no circumstances shall be responsible for any other charge whatsoever, including but not limited to charges or claims for labor, lost business, lost time, lost profits, loss of use, or any kind of incidental or consequential damages, however denominated or described.
- To activate your one year limited warranty, complete and mail the warranty registration supplied.
- Royal Leisure should be your preferred contact during the warranty period because of the product's technical features. Contact Tel: +44(0)115 9736939.

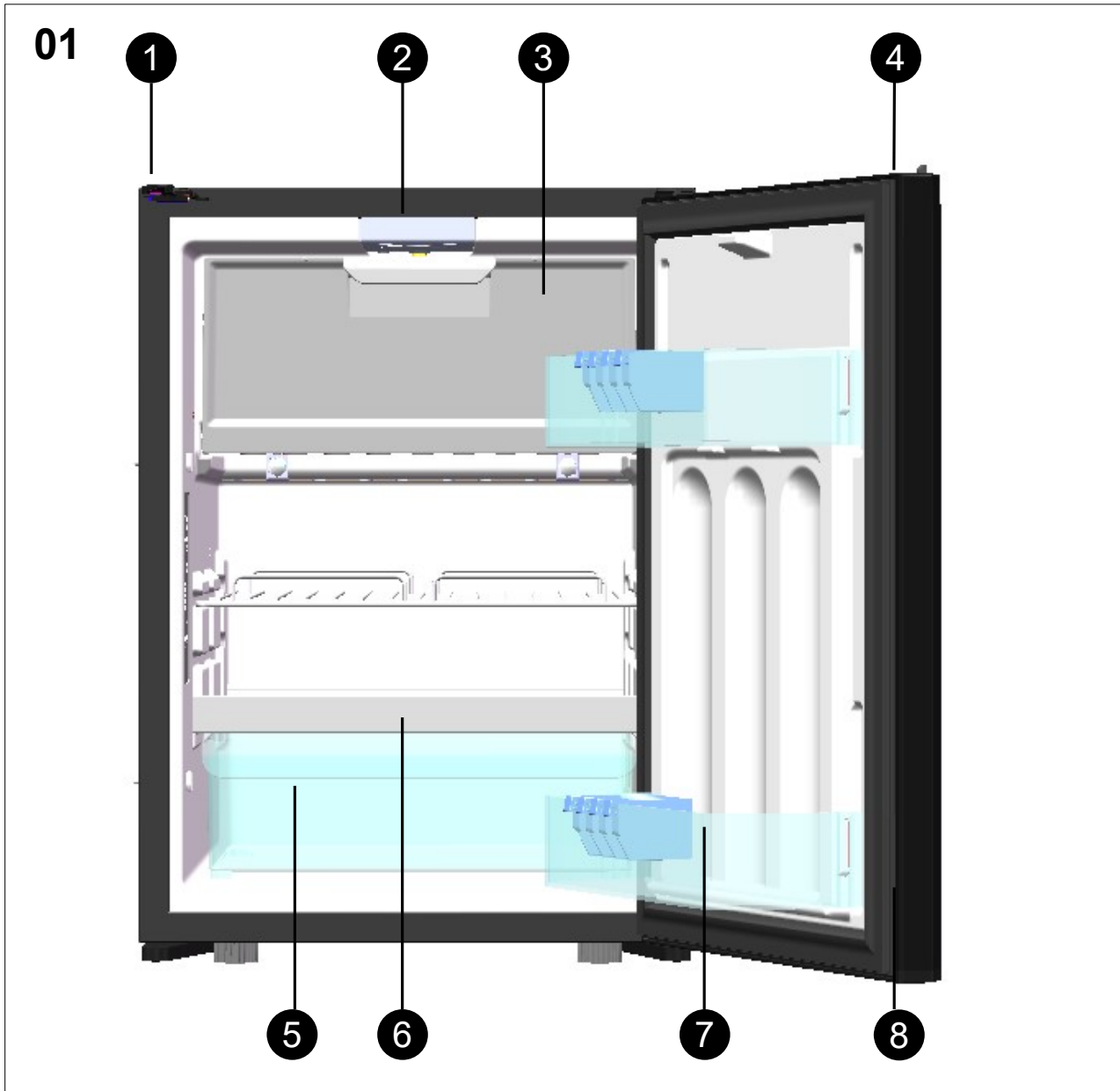
We accepts no liability for damage in the following cases:

- Natural disasters, wars, pandemics and force majeure etc..
- Defects caused by mechanical influences and overvoltage.
- Defects caused by improper installation, maintenance, or adjustment.
- Defects caused by the improper use of parts or parts not manufactured or supplied by the supplier for repairs or replacements to the refrigerator.
- Alterations to the product without expressing permission from the supplier.
- Use for purposes other than those described in the instructions.
- Travel expenses for bringing the refrigerator to an authorized Service Center for warranty coverage and additional costs caused by the inability to bring the refrigerator to an authorized Service Center.
- We will not be liable for any incidental or consequential loss or damage, due directly or indirectly to the use of this product.
- If the warranty is valid, you can get free service and replacement of defective parts, at no charge, at all authorized Service Centers, which has the option of replacing the defective parts or the entire refrigerator.

6.0 Product components

All figures in this manual are schematic; some features and devices may not be consistent fully with your refrigerator and the specific structure and configuration shall be subject to the actual product.

The appearance and specifications of the actual product may differ depending on the model.



1 Locking catch

2 Built-in light

3 Freezer Door

4 Handle

5 Crisper bin

6 Refrigerator shelf

7 Door bin

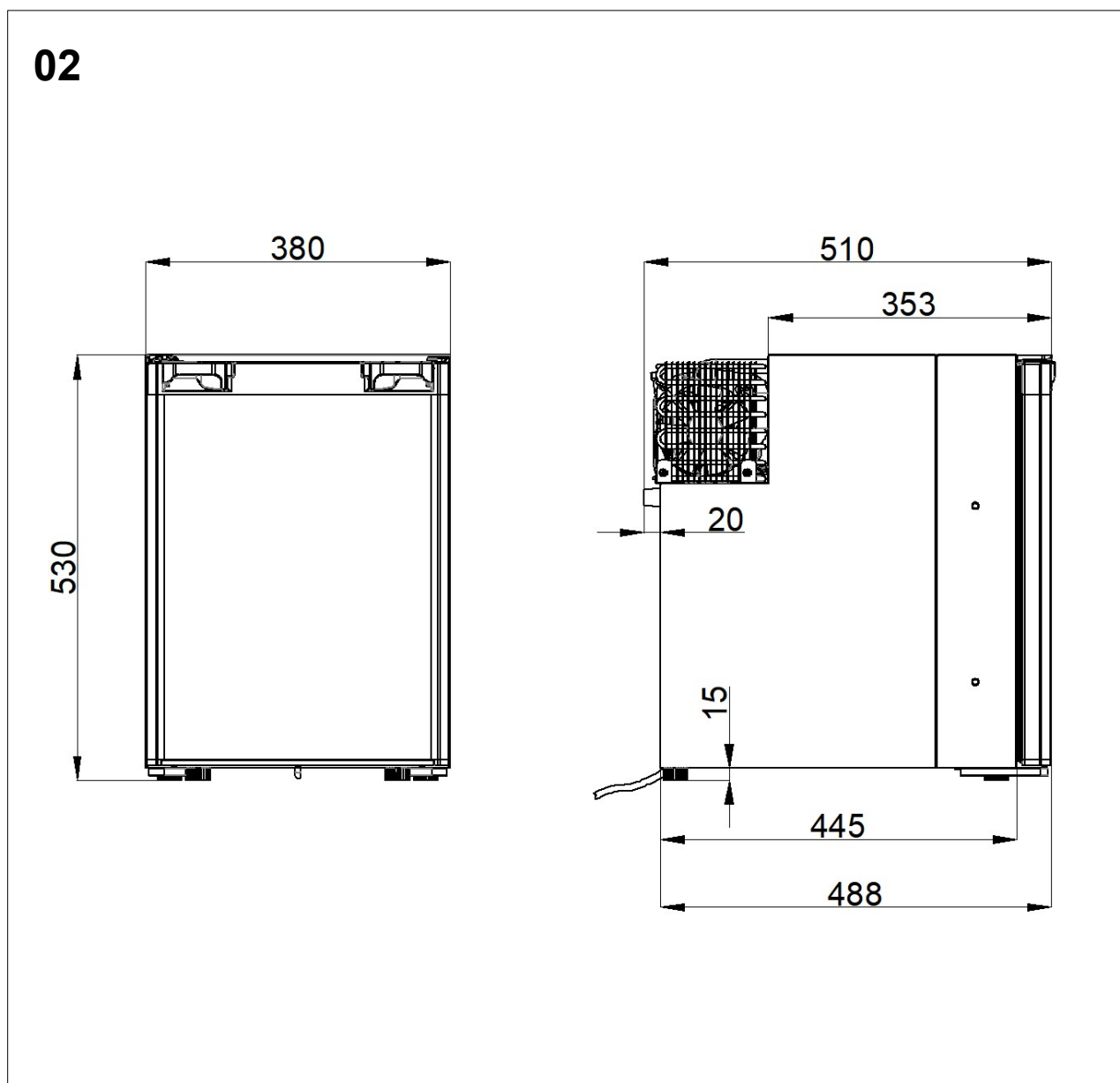
8 Door

7.0 Installation and connection

7.1 Overall dimensions

i NOTE

The figure is schematic, not representing the actual product. The specific dimension shall be subject to the product that you have bought.



7.2 Recess dimensions

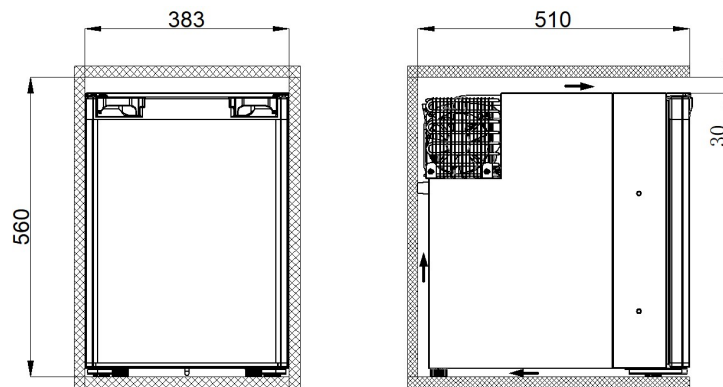
Select a good location to place your appliance where it is flat and easy to use. Avoid placing the unit near heat sources, direct sunlight or moisture .

CAUTION!

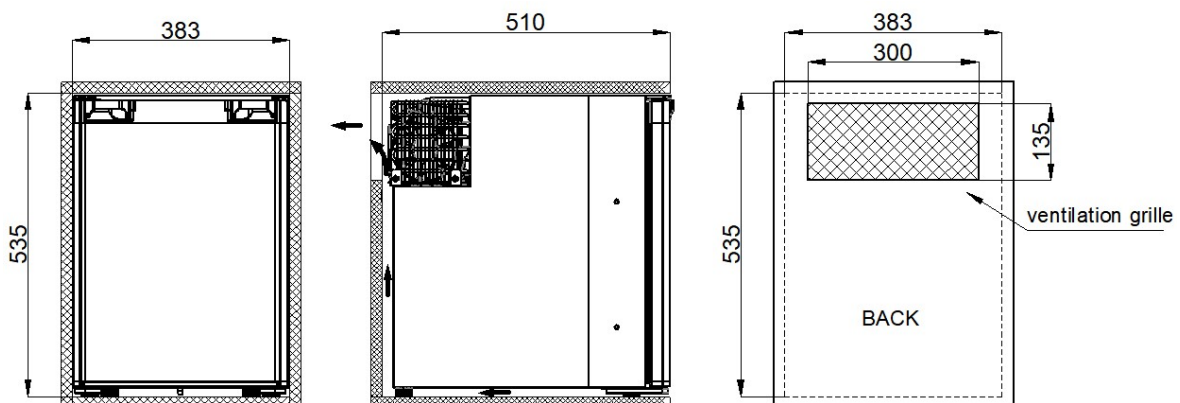
- To ensure proper air circulation around the refrigerator, please maintain sufficient space. If install the top panel or closet, please maintain sufficient space to move when necessary.
- The refrigerator must be placed on a hard, flat ground; if cushioning is needed, stable, hard, nonflammable cushion blocks shall be used, rather than the foam backing of refrigerator.
- The refrigerator shall be kept away from damp locations where water is easy to splash; water or dirt shall be removed with soft cloth timely to prevent rusting which may have an effect on the electrical characteristics.
- Place the refrigerator in a well-ventilated place, reserve a certain space around and behind the refrigerator, and do not cover or block the air grille on the rear cover plate of compressor at the back of refrigerator; Keep the refrigerator away from heat source or direct sunlight.

03

The first method of installation is ventilated through the top of the refrigerator, the Minimum hole size of the recess is W383mm×D510mm×H560mm.



The second method of installation is ventilated through the ventilation grille behind the refrigerator, and the ventilation hole is necessary. The Minimum hole size of the recess is W383mm×D510mm×H535mm.



7.3 Connecting the refrigerator to DC power supply

Remove all packages, including the foam backing at the bottom of refrigerator and the tapes fixing accessories in the box.

Remove the film: There is a layer of transparent film on the panel of our product, which can protect products from being scratched in the process of production and transportation, and you can choose to reserve or remove the film as needed.

The refrigerator can be operated with a 12V DC voltage supply, please see the attached circuit wiring diagram, see FIG.15.

Due to product upgrade and optimization, the circuit wiring diagram may not be consistent fully with your refrigerator and the specific circuit wiring diagram shall be subject to the actual product.

CAUTION!

- Check the voltage specification on the data plate to make sure it is the same as the power supply.
- To avoid voltage drops and loss of performance, keep the connection cable as short as possible and directly connected from the power source to the DC wire connection of the unit. Therefore avoid additional switches, plugs or power strips.
- When connecting to DC power supply, the circuit shall be protected by fuses with maximum of 15 Amps, the red cable of the DC power supply connects to the positive pole of the battery and the white cable connects to the negative pole of the battery.
- Disconnect the cooling device and all power source connections from the battery before you connect the battery to a quick charging device. Overvoltage can damage the electronics of the device.
- It is recommended that the cable length (see below table).

The cable cross section	Maximum length
2mm ²	2m
2.5mm ²	2.5m
4mm ²	4m
6mm ²	6m
10mm ²	10m

To protect the battery, the refrigerator switches off automatically if the voltage is insufficient (see below table).

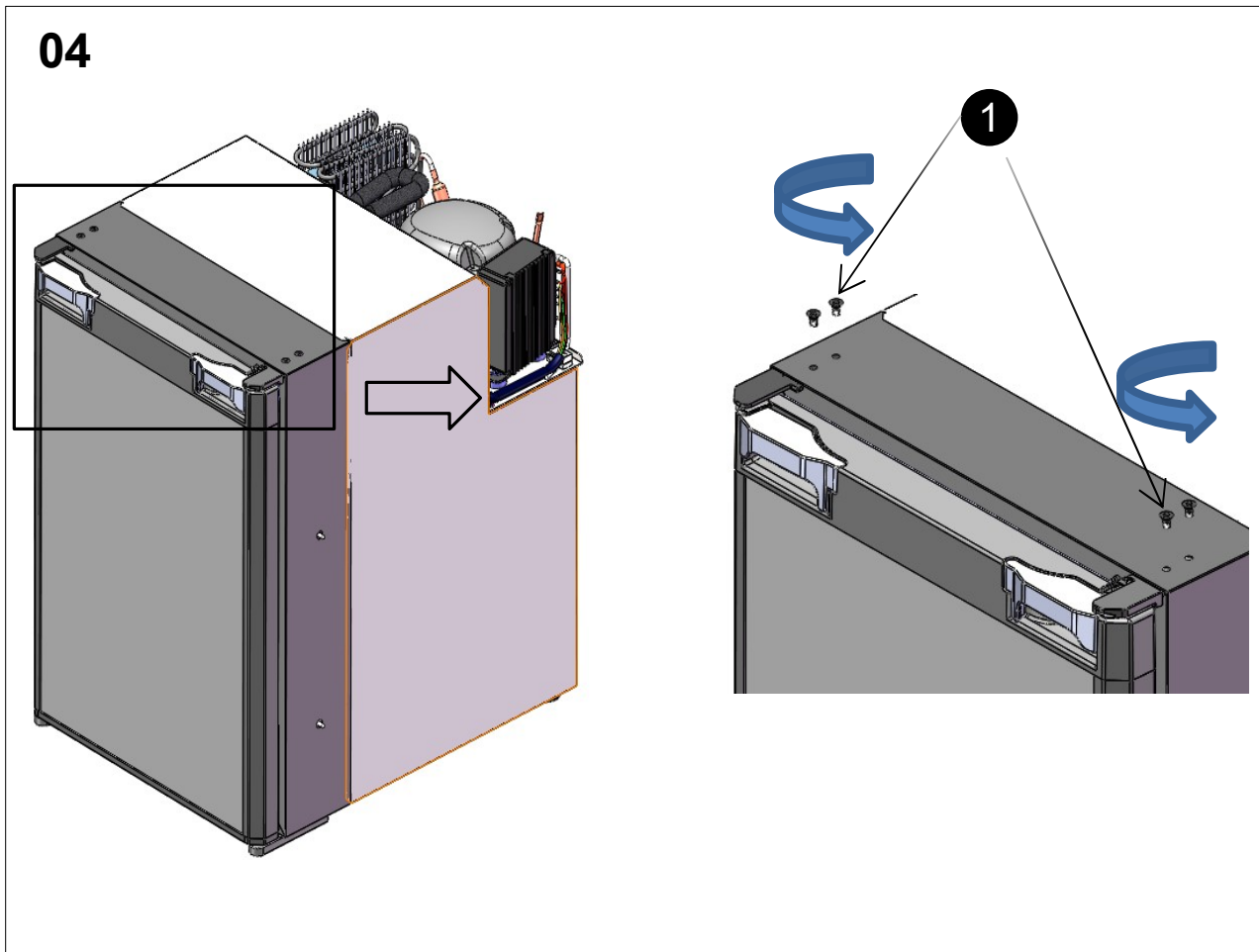
Rated Voltage	12V
Cut-in voltage	10.9V
Cut-off voltage	9.6V
Max working voltage	16V

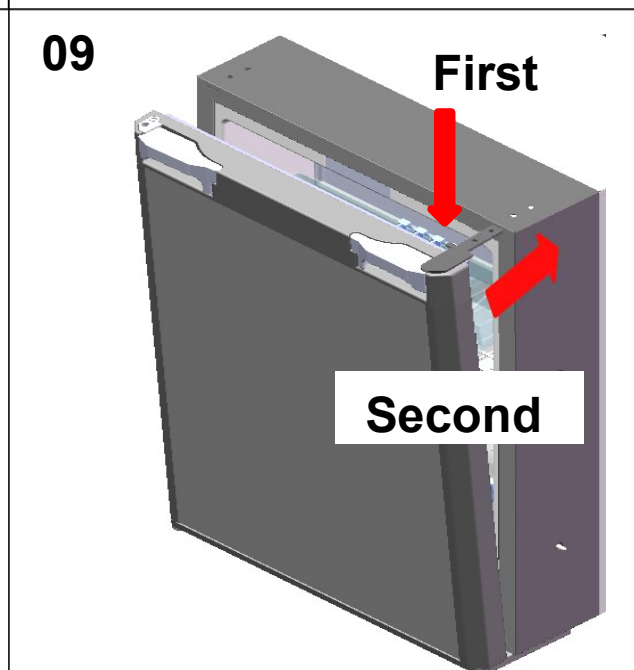
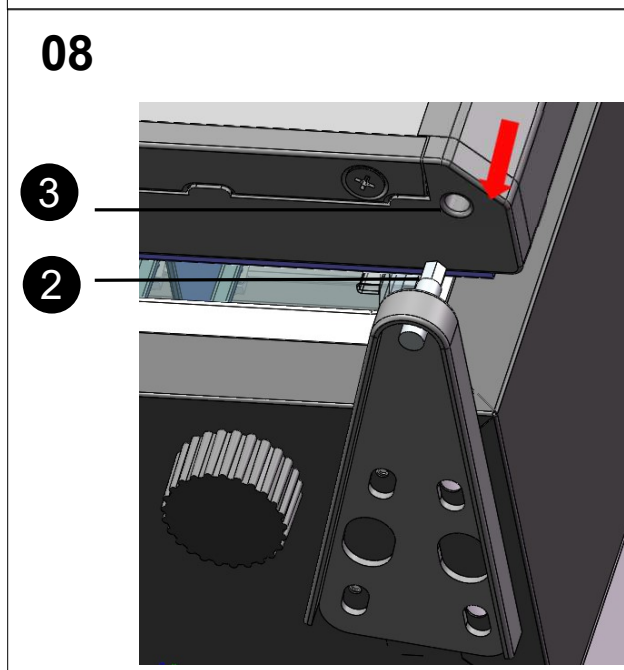
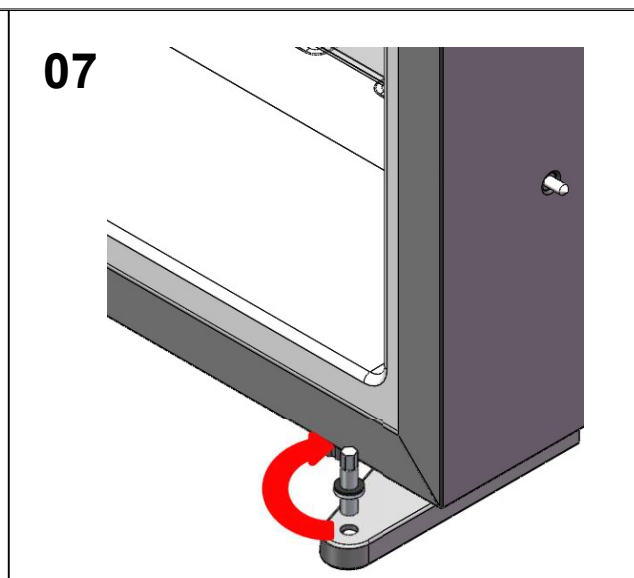
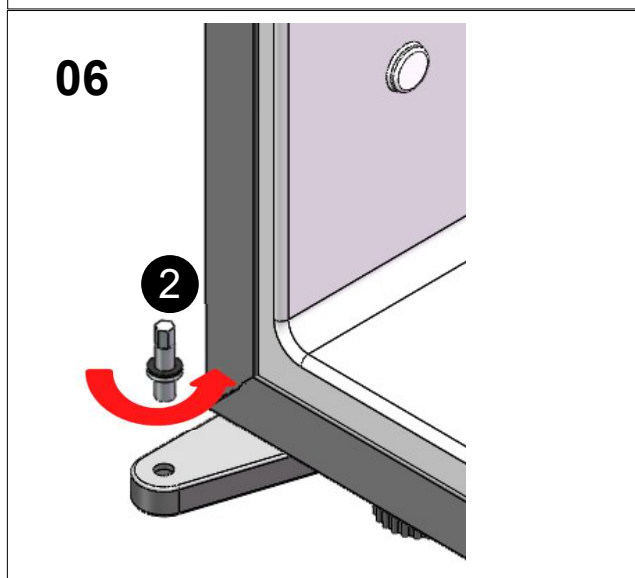
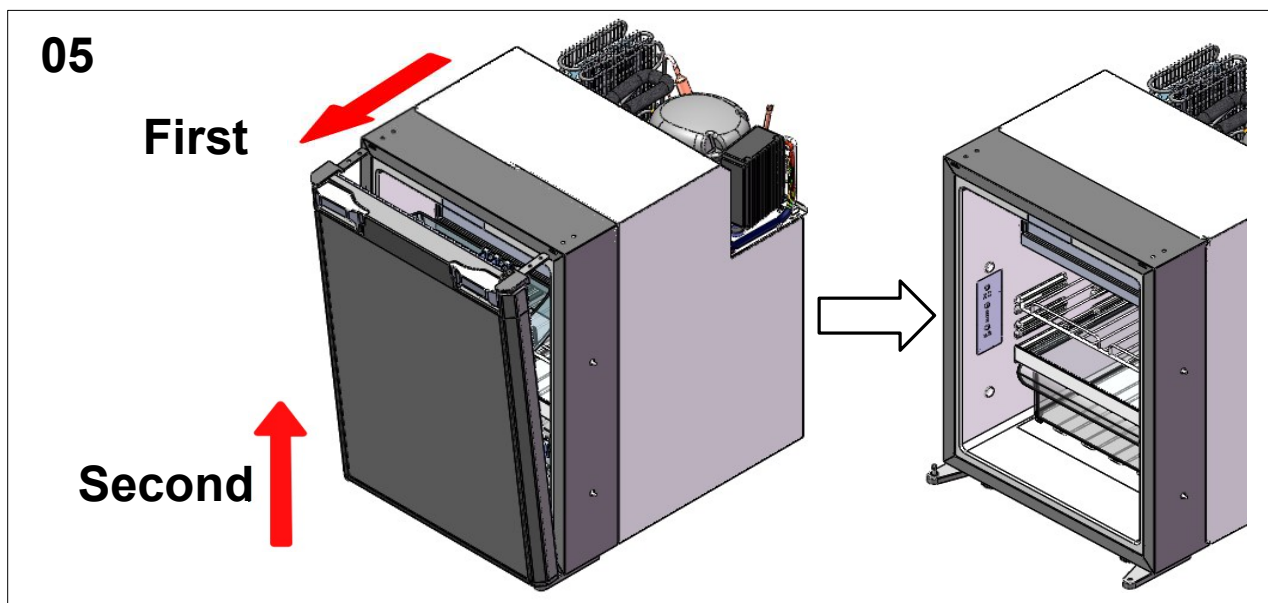
7.4 Reversing the door

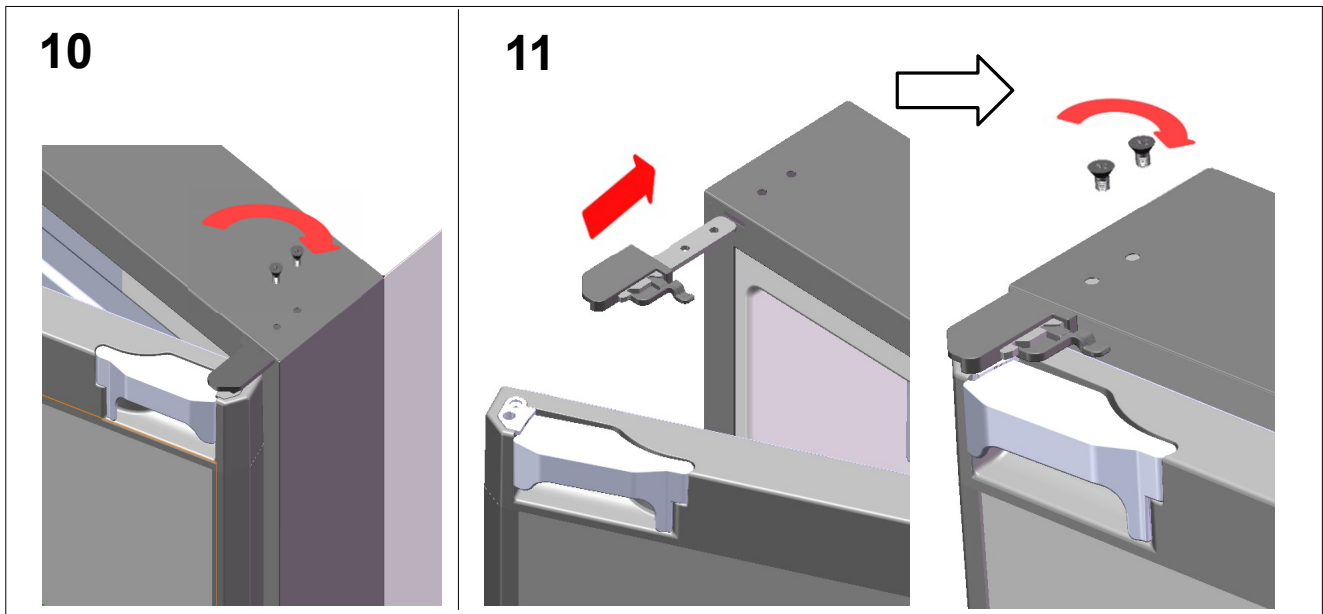
Reverse the door as the following steps when needed:

Taking the fridge with the rotating shaft on the left and the door opens from right to left as an example:

- Unscrew the set screws **1** on the left and right hinges (See FIG.04).
- The upper part of the door is tilted 5°~10° outwards, then the entire door and the two upper hinges are taken out upwards (See FIG.05).
- Take out the shaft **2** on the left_lower hinge (See FIG.06) and install it on the right_lower hinge (See FIG.07).
- Align the Right_lower shaft hole **3** of the door into the Right_lower hinge shaft **2** (See FIG.08).
- Place the right hinge (with rotating shaft) into the shaft hole mounted on the top of the door body, and insert it into the hinge hole at the top of the box (See FIG.09).
- Tighten the screw on the right hinge (See FIG.10).
- Take the left hinge and insert it into the left hinge hole at the top of the box, close the door and tighten the screws (See FIG.11).







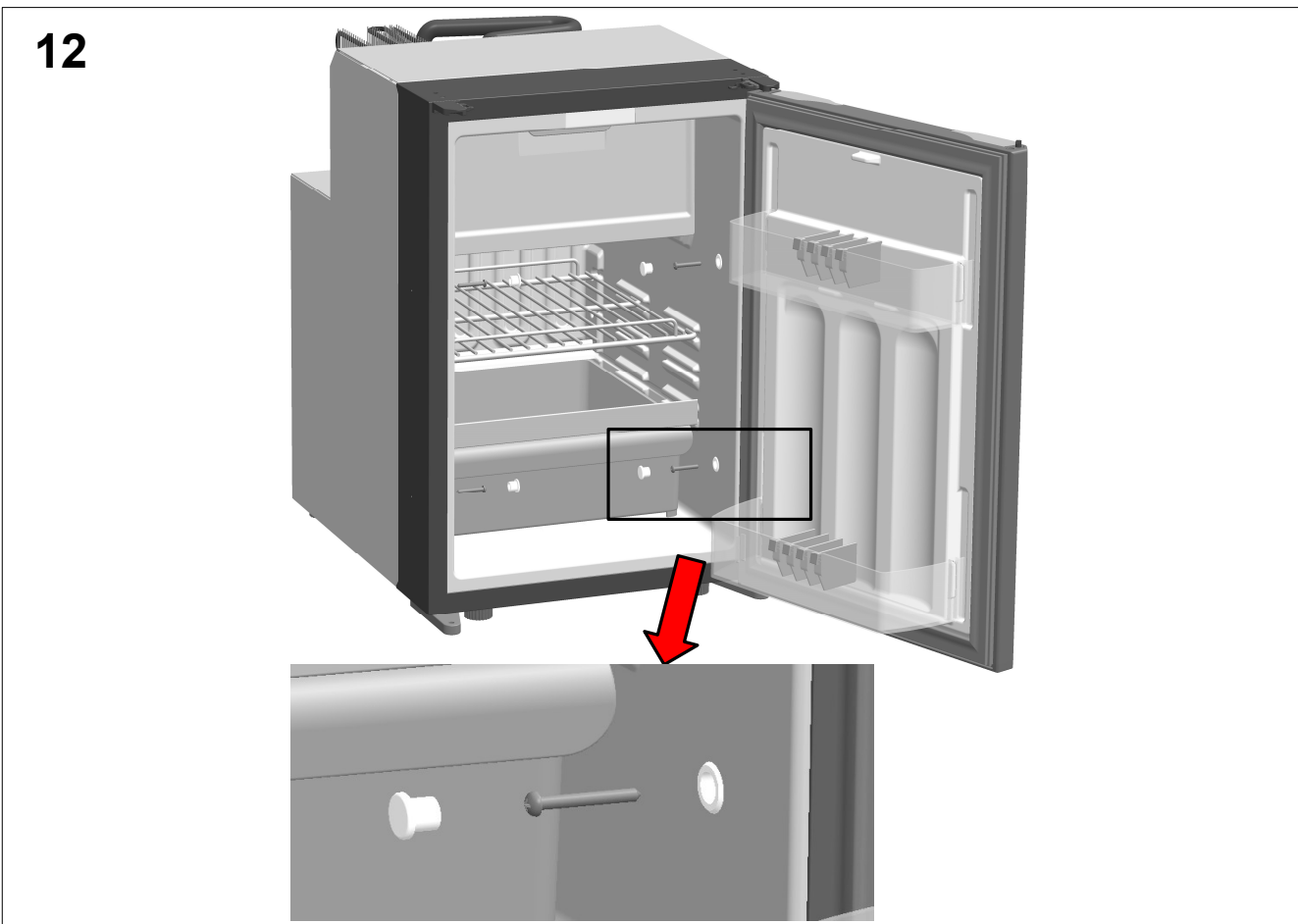
7.5 Fixing the refrigerator

Connect the refrigerator drain pipe reliably.

Push the refrigerator into the recess.

Open the refrigerator door.

Fix the refrigerator in place using suitable screws(*4) and press the blanking plugs(*4) into the openings.



8.0 Using the refrigerator

DANGER!

Do not touch exposed cables with your bare hands when the refrigerator is in operation.

WARNING!

- Before starting the refrigerator, make sure the power line and the plug are dry.
- Ensure the ventilation grille on the top of the refrigerator is not blocked or covered.
- Protect the device and cables against heat and moisture.

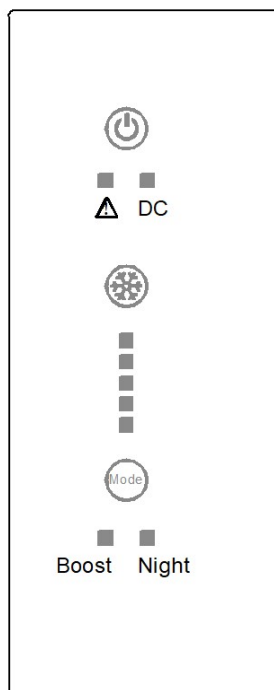
CAUTION!





- Make sure the vehicle is level and clean it before you operate the refrigerator.
- Let all hot foods cool before putting them in the refrigerator.
- The freezer compartment is made to keep pre-frozen food frozen and not to quick freeze food.
- Ensure foodstuffs do not touch the rear wall of the cooling area.
- Foodstuff may only be stored in its original packaging or in suitable containers.
- The maximum weight per shelf is 17.64 lb.(5kg).The maximum weight per door-bin is 4.4lb.(2kg). The maximum weight for the entire door is 8.8lb. (4kg).

NOTE



- Let the refrigerator stand for above 2 ~ 6 hours, and then power on to ensure that the refrigerator can operate normally.
- Let the refrigerator cool for 4 hours before loading with food. If the refrigerator does not start to cool down after about 2 hours, contact Royal Leisure Service Center. Contact Tel: +44(0)115 9736939.

8.1 Operating controller









-  Power
-  Operation mode setting
-  Temperature setting
-  Error lamp

8.1.1 Power on/off the refrigerator

- Power on the refrigerator by touching the power button  for about 1 second, all indicator lamps will be on and the buzzer rings.
- All indicator lamps will be off after 10 seconds except the DC indicator lamp.
- Please wait for a moment as the compressor will start up with some delay.
- Power off the refrigerator by touching the power button  for 10 seconds, the buzzer rings and all indicator lamps will be off.

8.1.2 Temperature setting (Factory default setting is Gear3)

- Set the temperature by touching the temperature setting button .
- Touching the temperature setting button  to set the temperature from “cold”(only one gear lamp is on) to “very cold”(all five gear lamp are on), refer to the following (The actual temperature can be affected by ambient temperature.) :

Gear Lamp					
Fresh	6~10°C	4~8°C	2~6°C	0~4°C	-2~2°C
Freezer	-17~-10°C	-19~-12°C	-20~-14°C	-21~-15°C	-22~-16°C

- After finishing the temperature setting, the indicator lamp will be off.

NOTE

The cooling performance and power consumption can be affected by:

- The ambient temperature.
- Ventilation.
- The amount of food to be conserved.
- Number and duration of the door openings.
- Battery low voltage protection.

WARNING!


Do not operate the refrigerator when the ambient temperature is above 55° C operation above recommended ambient temperatures can cause permanent damage to the compressor. Operation when the ambient temperature is higher than 43° C can result in poor cooling performance.

8.1.3 Operation mode setting (Factory default setting is Boost mode)

Setting the operation mode by touching the mode button  .

- Night: The fan operates at low speed and the compressor speed is limited, to reduce noise.
- Boost: The compressor operates in preset high speed and the refrigerator gets rapid cooling.

8.2 Fault Alarm

- If a fault occurs, the error lamp  flashes and the gear lamps flashes according to certain rules to indicate the error type. The alarm will continue until the fault is resolved or any button is touched.
- The gear lamps flash 5 times and the buzzer rings 1 times every 5 seconds, If multiple errors occur at the same time, it will display in a loop every 5 seconds.
- The specific Error Code and corresponding Error type are shown on the below table.

Error Code	Gear Lamp	Error type	Remedy
E1	⊙○○○○	The input voltage is outside the set range	See section 7.3 on page 8
E6	○⊙⊙○○	The compressor controller hardware failure	Change the compressor controller
E9	⊙○○⊙○	Fridge sensor failure	Change the sensor
E10	○⊙○⊙○	Ambient sensor failure	Change the sensor
E11	⊙⊙○○○	Ambient temperature over 55°C	Keep ventilation or reduce the ambient temperature
E12	○○⊙⊙○	Abnormal door opening	Close the door or change the light PCBA

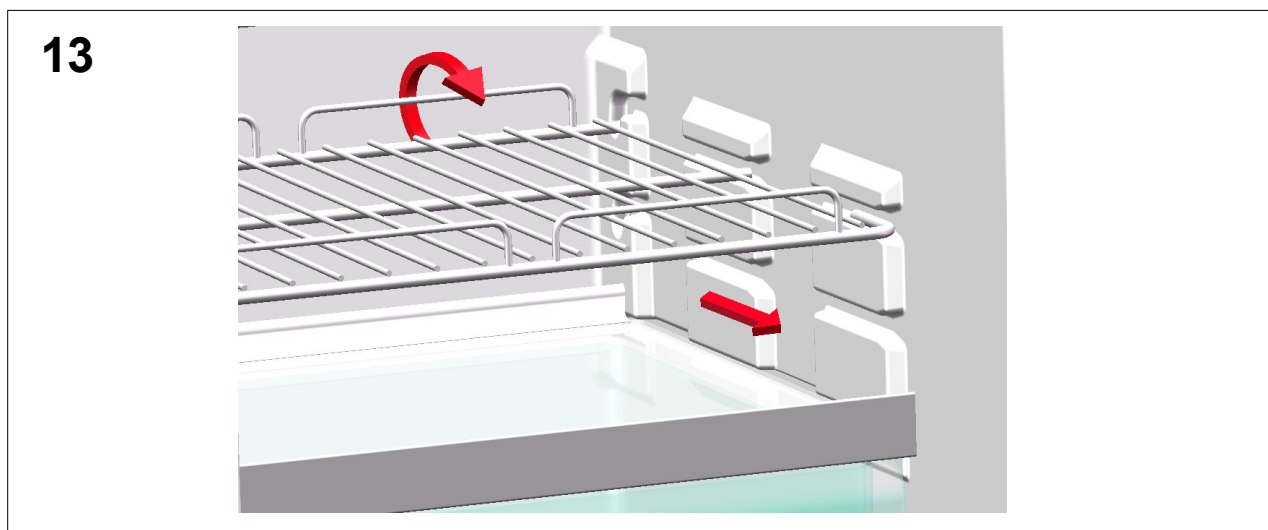
8.3 Defrosting

- Automatic defrost for 1 hour every 24 hours .
- When the frost thickness of the fresh-compartment's back wall reaches 1mm or the frost thickness of the freezer-compartment's inner wall reaches 3mm, please power off the refrigerator until all the frost is dissolved and clean.
- When many food is input into the refrigerator or the door is open frequently when ambient humidity is very heavy, frost can happen around the freezer door, which need to clean these frost manually. Especially when the food is wet or unpackaged, the frost around the freezer can be heavier.

8.4 Removing the shelves

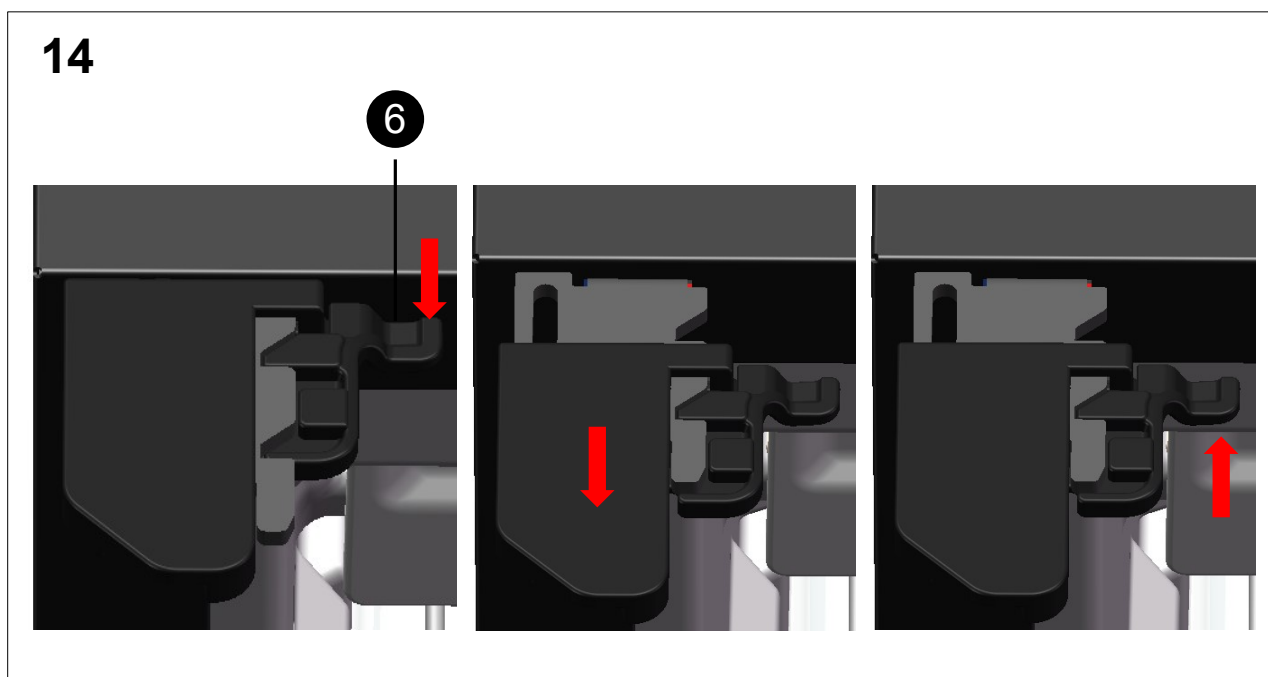
Remove the shelves as the following steps when needed

- Open the doors to 90° or more.
- Tilt the rear of the shelf up, then draw out the shelf. See FIG.13.
- Remove the shelf by pulling it forward



8.5 Storage

- Open the refrigerator door and hold it to the airing lock to keep ventilation as the following steps: Press down the locking catch piece ⑥, then make the gear_ teeth out of the inner slot. Pull the locking catch outwards so that the gear_ teeth engage with the outer slot. Lift up the locking catch piece ⑥. See FIG.14 .



9.0 Cleaning and maintenance

DANGER!



- Always disconnect the DC power source before you clean and service it.

CAUTION!

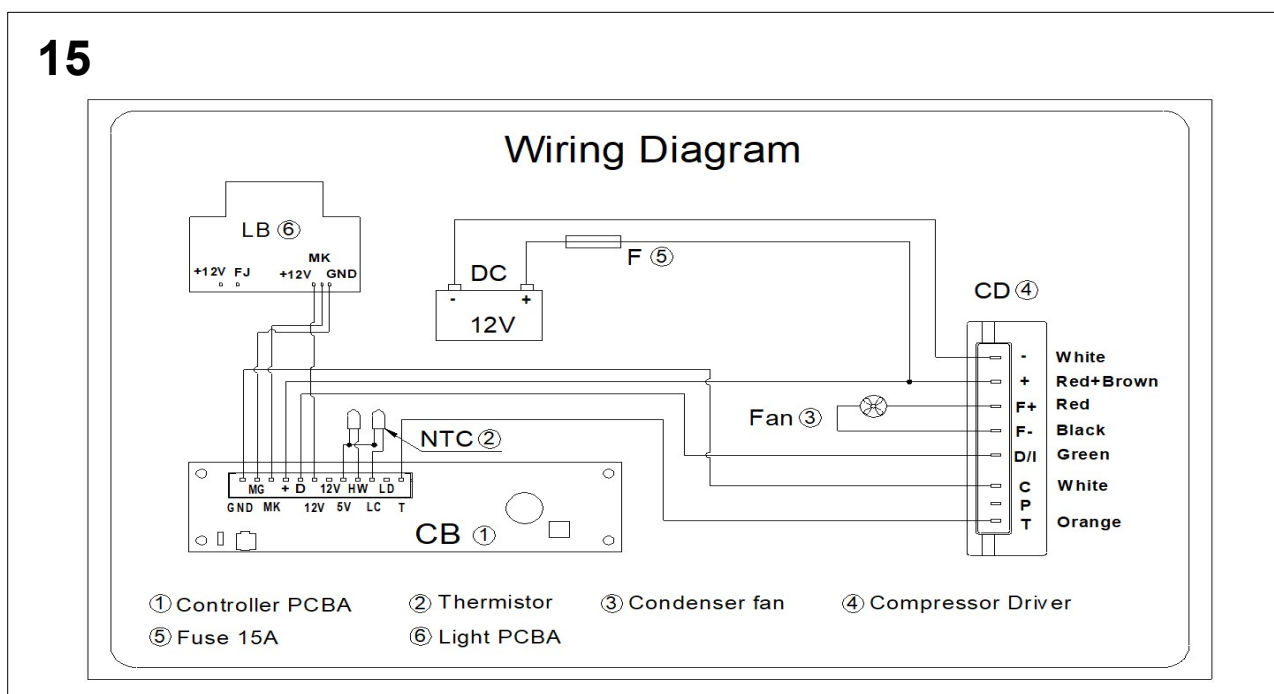
- Do not use harsh chemicals, ammonia, chlorine bleach, concentrated detergent, solvents, abrasives or metal scouring pads to clean your refrigerator inside or out. They can damage and/or discolor the refrigerator finish.
- Do not use warm water to clean glass shelves while they are still cold. Glass may break when exposed to sudden temperature changes or impact.
- Do not use hard or sharp tools to remove ice or free objects frozen in the device.

- A good time to clean the refrigerator is just after you defrost it. Clean the inside of the refrigerator as often as necessary to avoid food odors:
- Remove all food from the refrigerator.
- Clean the interior. Hand wash, rinse, and dry removable parts and interior surfaces thoroughly. Use a clean sponge or soft cloth and a mild detergent in warm water.
- Clean the door and drawer seals (gaskets). A dirty or sticky seal may adhere to the cabinet and tear when you open the door. Using a soft cloth and a solution of mild detergent and warm water, hand wash the door seals. Rinse with clear water and dry thoroughly.
- Clean the exterior surfaces. Wash exterior surfaces with a clean, soft cloth or sponge and a mild detergent in warm water. Rinse surfaces with clean, warm water and dry immediately to avoid water spots.
- Wipe the refrigerator dry with a cloth after cleaning.

10.0 Technical data

Total volume (L)	47
Freezer volume (L)	4.5
Connection voltage (V)	DC12
Rated current (A) @12V	5
Rated Power Day/Night (W) @25°C	45/30
Energy consumption (kW.h/24h) @25°C	0.5
Storage temperature (°C) @gear 3	Freezer -20~-14 Fresh 2~6
Climate class	ST/T
Refrigerant (Quantity)	R600a (17g)
Dimension WxDxH (mm)	380*510*530
Net weight (kg)	16
Foaming agent	C5H10
Inspection/Certification	CE / RoHS/  / 

11.0 Wiring diagram



To continuously improve our products, we reserve the rights to change some specifications in technical data & wiring diagram without further notice, please check the refrigerator rating plate.

12.0 Troubleshooting Guide

(1) The compressor is not running.

Fault	Possible cause	Remedy
Device does not function and has no power	Connection supply line interrupted	Establish a connection
	Main switch faulty (if installed)	Replace the main switch
Voltage is being applied, but the compressor does not operate	Ambient temperature too high	-
	Insufficient ventilation	Clean existing ventilation or install sufficient ventilation
	Condenser is dirty	Clean the condenser
Electric circuit between the pins in the compressor interrupted	Defective compressor	Replace compressor

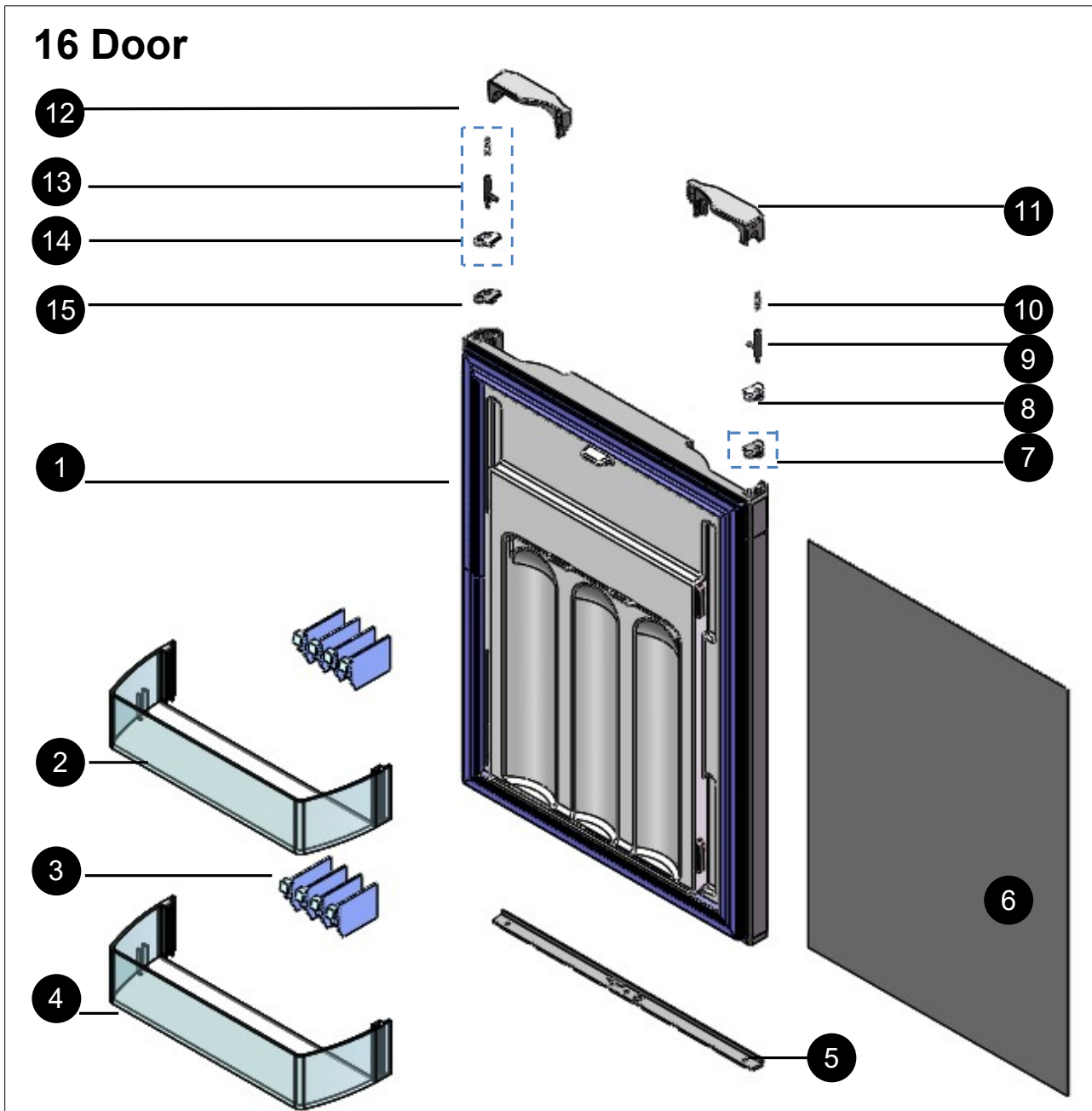
(2) Poor cooling, interior temperature increase.

Fault	Possible cause	Remedy
Compressor runs for a long time/ continuously	Ambient temperature too high	-
	Insufficient ventilation	Upgrade to satisfy requirements in installation guideline.
	Fan defective	Replace the fan
Compressor does not run often	Battery capacity exhausted	Change the battery

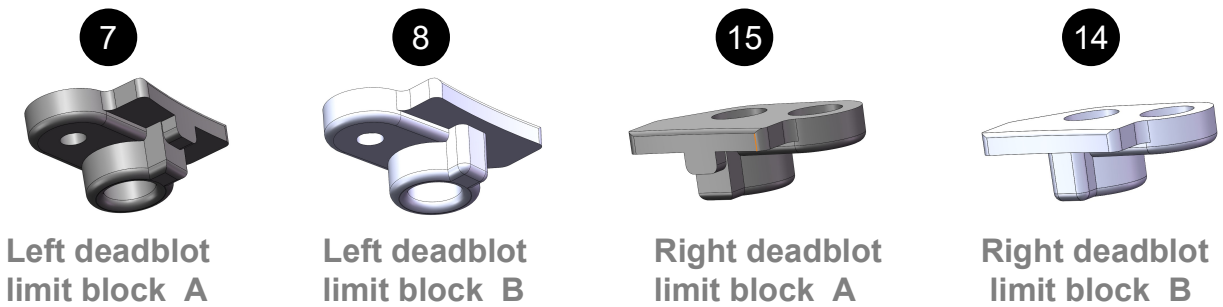
(3) Abnormal noises.

Fault	Possible cause	Remedy
Loud humming	A component of the refrigerant circuit cannot be moved freely (touching the wall)	Bend the component carefully away from the obstruction
	Some foreign objects stuck between the refrigerant circuit and the wall	Remove the foreign object
	Fan noise	Replace the fan

13.0 Spare parts list-Door



Enlarge image of deadblot limit blocks:



Left deadblot limit block A

Left deadblot limit block B

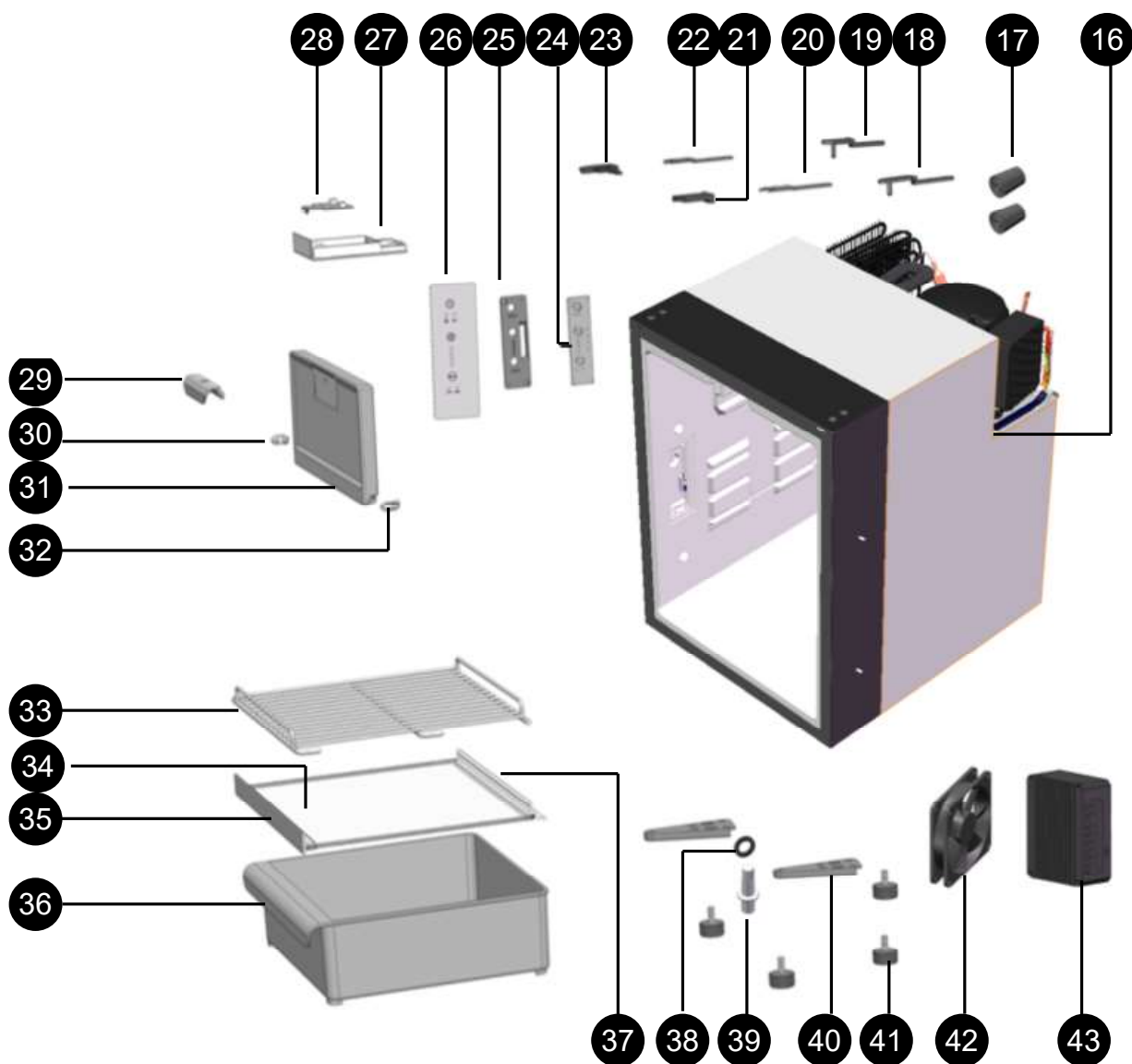
Right deadblot limit block A

Right deadblot limit block B

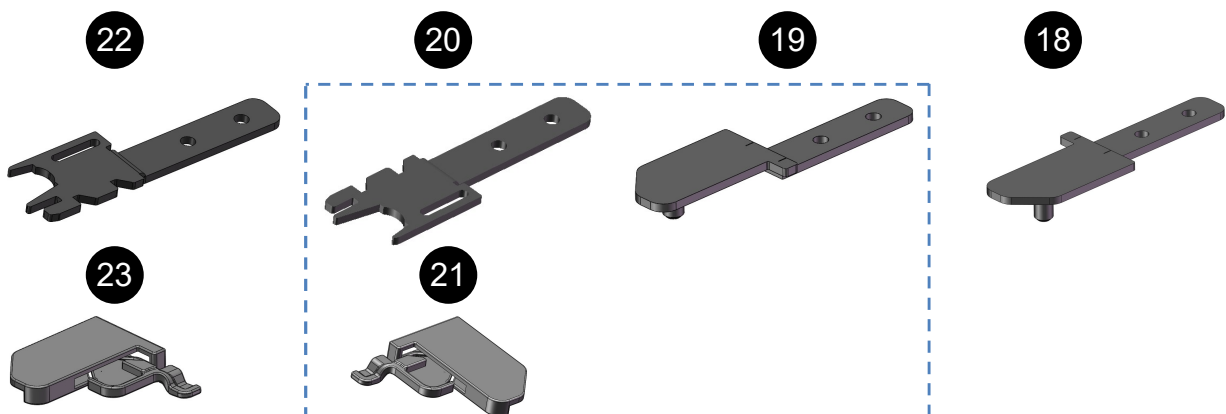
The parts of the dotted box will be used for the right door refrigerator.

14.0 Spare parts list- Cabinet ASM

17 Cabinet



Enlarge image of hinges and caps :



The parts of the dotted box will be used for the right door.

No.	Part code	Description	QTY	Remark
1	02.09.05500002	Door assembly	1	
	02.09.05501002	Door assembly_silvery	1	
2	01.03.04006266	Door bin	1	
3	01.03.04006216	Door bin clapboard	8	
4	01.03.04005003	Door bin	1	
5	01.03.05540325	Door panel baffle	1	
	06.03.05541325	Door panel baffle_silvery	1	
6	02.01.05540122	Door panel	1	
	06.01.05541122	Door panel_silvery	1	
7	01.03.05540307	Left deadblot limit block_A	1	
	06.03.05541307	Left deadblot limit block_A_silvery	1	
8	01.03.05540407	Left deadblot limit block_B	1	
	06.03.05541407	Left deadblot limit block_B_silvery	1	
9	01.03.09040011	Upper guide post	1	
10	01.06.00020147	Deadbolt spring	2	
11	01.03.05540337	Left Handle	1	
	06.03.05541337	Left Handle_silvery	1	
12	01.03.05540338	Right Handle	1	
	06.03.05541338	Right Handle_silvery	1	
13	01.03.09040025	Lower guide post	1	
14	01.03.05540408	Right deadblot limit block_B	1	
	06.03.05541408	Right deadblot limit block_B_silvery	1	
15	01.03.05540308	Right deadblot limit block_A	1	
	06.03.05541308	Right deadblot limit block_A_silvery	1	
16	02.08.05500001	Cabinet assembly	1	
17	01.06.00270031	Insulated column	2	
18	01.01.05541132	Fixed shaft right up hinge	1	
	06.01.05544132	Fixed shaft right up hinge_silvery	1	
19	01.01.05541131	Fixed shaft left up hinge	1	
	06.01.05544131	Fixed shaft left up hinge_silvery	1	

No.	Part code	Description	QTY	Remark
20	01.01.05541130	Right up hinge	1	
	06.01.05544130	Right up hinge_silvery	1	
21	01.03.05540311	Right hinge cap	1	
	06.03.05541311	Right hinge cap_silvery	1	
22	01.01.05541129	Left up hinge	1	
	06.01.05544129	Left up hinge_silvery	1	
23	01.03.05540310	Left hinge cap	1	
	06.03.05541310	Left hinge cap_silvery	1	
24	01.02.05540259	Controller PCBA	1	
25	01.03.05540336	Controlpanel	1	
26	01.05.05540533	Controlpanel label	1	
27	01.03.05540334	Light cover	1	
28	01.02.14520046	Light PCBA	1	
29	01.03.05542337	Freezer door Handle	1	
30	01.03.05540397	Freezer door shaft_left	1	
31	02.09.05500003	Freezer door assembly	1	
32	01.03.05540387	Freezer door shaft_Right	1	
33	01.01.05540128	Dip plastic shelf	1	
34	01.03.05540326	Glass shelf	1	
35	01.03.05540396	Glass shelf front stop strip	1	
36	01.03.05540395	Crisper bin	1	
37	01.03.05540398	Glass shelf rear stop strip	1	
38	01.03.03001602P	Nylon spacer	1	
39	01.01.03001253P	Door lower shaft	1	
40	01.01.14540134	Lower hinge	2	
41	01.03.14540339	Foot	4	
42	01.02.14540213	Condenser fan	1	
43	01.02.00040222	Compressor control driver	1	



At home out there

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