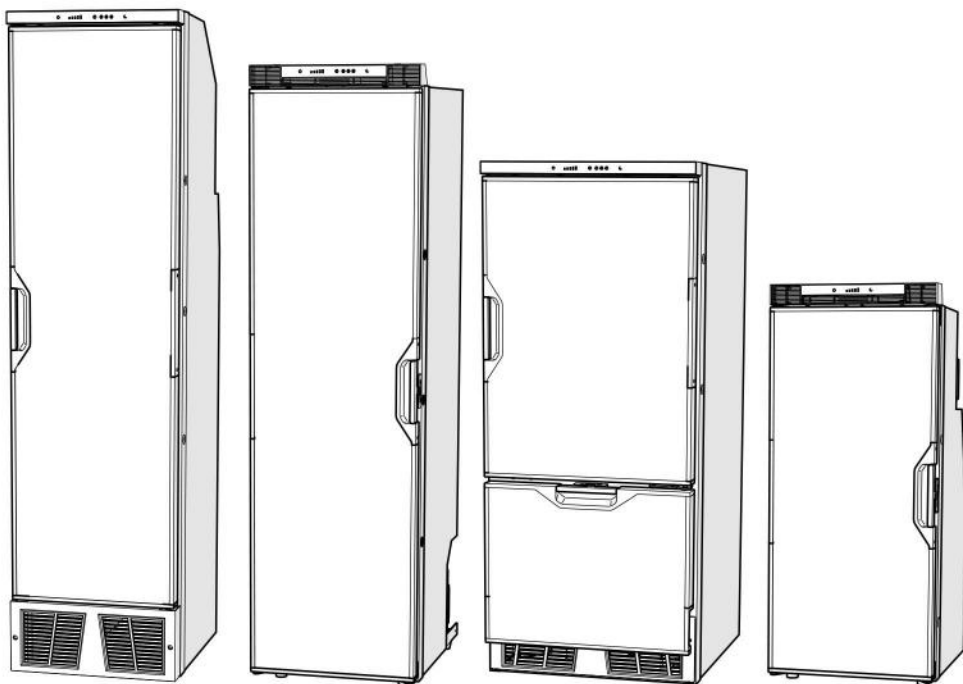


THE FORD



Refrigerator T2000 Series

Installation Manual

692277/0320-V01

We: THETFORD B.V.

Address: Nijverheidsweg 29, 4879 AP, Etten-Leur, Netherlands

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Declare that

Product Types; Refrigerator

Model Number/Description; T2000 Series

Satisfies the essential requirements of the following directives:

- RoHS2 Directive 2011/65/EU
- EMC Directive 2014/30/EU
Based upon standard(s) EN 50498
EN 55014
- UN Agreement No. 010 - revision 5 – Automotive EMC

Name : B. Anderson
Title/Position : Director
Place & Date of Issue : Etten-Leur, 04 March 2020

Signature

: 

EN

Original Installation Manual

Contents

1	Introduction.....	3
2	Symbols.....	3
3	Regulations and standards.....	4
4	Installation audit form.....	5
5	Serviceability.....	5
6	Designation codes, drawings and models.....	5
7	Position and placement.....	6
8	Prepare for installation (T2090 only).....	7
9	Connecting electrical supplies.....	9
10	Mounting the refrigerator.....	15
11	Ventilation.....	20
12	Installing door panel.....	23
13	Door conversion.....	26
14	Warranty and servicing.....	28

1. Introduction

This is the installation manual for the Thetford T2000 series refrigerator. The manual is meant for qualified installers who will install the refrigerator in a mobile leisure vehicle. Read the information and instructions carefully and follow them strictly to install the refrigerator safely and correctly.

Also read the warnings in the user manual before testing the refrigerator after installation.

Our policy is one of continuous development and improvement. Specifications and illustrations may change subsequent to publication.



If the appliance is not installed in accordance with national and European regulations, rules and standards this will void the warranty and may lead to criminal prosecution.

2. Symbols

Key to symbols:



Warning. Risk of injury and/or damage.



Attention. Important information.



Note. Additional information.

3. Regulations and standards



Do not modify this appliance, unless the modification is authorised and carried out by the manufacturer or their agent.



Use only genuine and approved parts and materials.



Wear the correct Personal Protective Equipment during the installation. Also follow the applicable safety regulations.



Electrical appliances should only be installed by qualified and certified professionals.



The electronic connections must be installed in accordance with the latest technical regulations.



Make sure the refrigerator is transported and handled in the upright position, or on its side with the electronics facing down as depicted in Installing door panel.



After the refrigerator has been transported and/or on its side, let the refrigerator stay upright for 30 minutes before switching on.



Install the refrigerator in accordance with the local/national laws.



Never expose the refrigerator to water or moisture.



Never open or damage the cooling system at the back or on the inside of the refrigerator. The cooling system is pressurised and contains flammable substances.



The performance of the refrigerator may be affected by adjacent heat sources such as an oven or stove. Protect the refrigerator against any heat sources by fitting insulation.



Never reposition or change the electronic components.



In order to prevent the risk of fire in the event of uncontrolled leakage of the refrigerant system, make sure that the refrigerant charge per net room volume does not exceed 8 g/m^3 . Net room volume is defined as the gross room volume minus the volume of any product, equipment, or objects located in the living area. The refrigerant charge amount can be found on the serial label.



Make sure no equipment that produces sparks or flames is installed close to the cooling system.



Any error messages coming from the refrigerator should not disturb the driver. For example: flashing of the display to indicate an error while driving.



Do not use the drawer as a step or ladder.

4. Installation audit form

Thetford offers an additional service by auditing the installation of its products. This means that when a Thetford product is installed a Thetford local service representative will carry out a specific audit based on the Thetford installation instructions. The audit is meant as a reference for the specific model to ensure correct installation. In any case the Thetford local service representative can be contacted for any additional support related to the installation of the product.

5. Serviceability

The installer of Thetford products is responsible for proper installation to ensure the correct functionality and serviceability of the appliance. In terms of serviceability, this means that a dealer or an authorised Thetford service partner must be able to de-install and re-install the Thetford products within the time that is allowed according to the Thetford time-list, using standard tools and equipment.

This is to claim any warranty during the period of 3 years after purchase date. The serviceability of the product is also included in the audit. In case of any queries on this subject, please contact the Thetford local service representative before installing the product.

6. Designation codes, drawings and models

Each product has a specific identification code, the designation code. The designation code can be found on the data badge. See Warranty and servicing for the location of the data badge. The different positions of the code stand for different variations of the refrigerator. In these instructions, the designation will be used as reference.

Table 1: Designation example T2090 C -N 191 A 301 R 25 CI

T2090	C	- N	191	A	301	R	25	CI
Refrigerator model	Refrigerator version	market	Type of foamed cabinet	Type of cooling unit	Type of door	Hinge position	Type of control panel	Type of communication

Table 2: Available drawings and models

Model	2D drawings	3D files	Doorpanels
T2090	LE1486	LE1487	LE1494
T2138	LE1484	LE1485	LE1495
T2152	LE1488	LE1489	LE1496
T2160	LE1482	LE1483/LE1492	LE1497/LE1498
T2175	LE1480	LE1481/LE1491	LE1497/LE1498

The 2D drawings consist of product dimensions, screw positions and hinge position.

7. Position and placement

- Use the mounting dimensions as shown below.

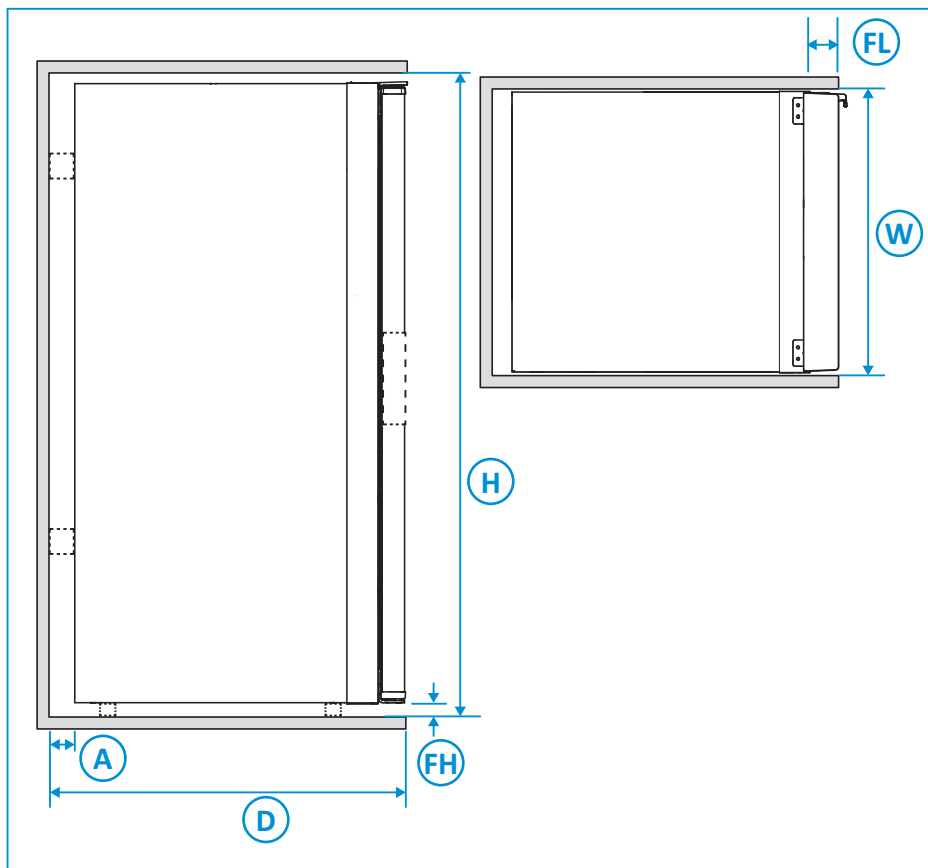


Table 3: Mounting dimensions

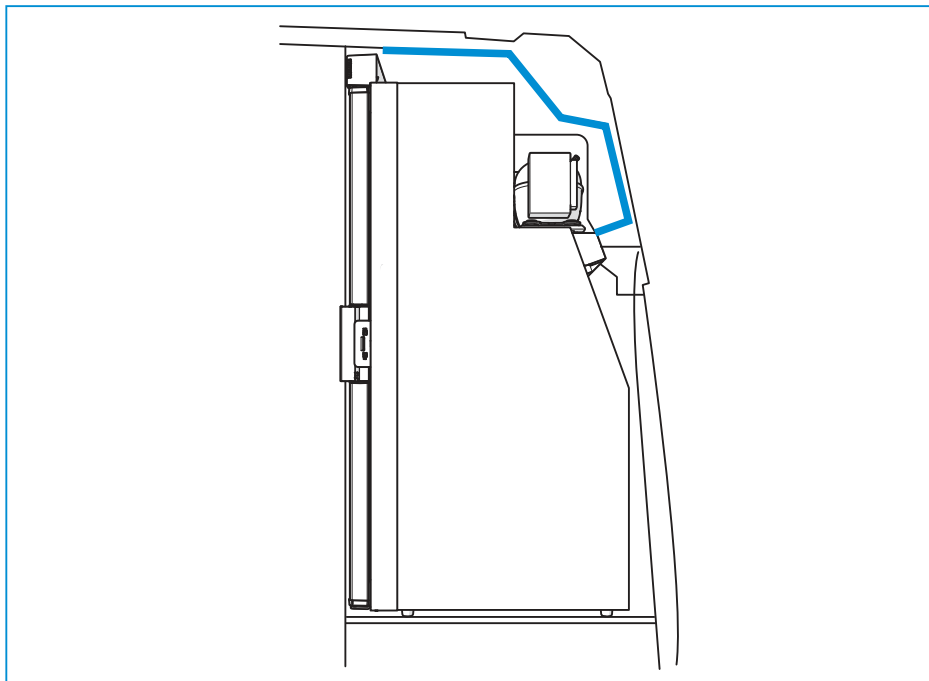
Model	H	W	D	FL	FH	A
T2090	982	420	506	21	20	20
T2138	1602	420	503	55	3	n.a.
T2152	1504	420	570	42	28	40-60
T2160	1249	527	563	55	3	5
T2175	1249	527	613	55	3	5

8. Prepare for installation (T2090 only)

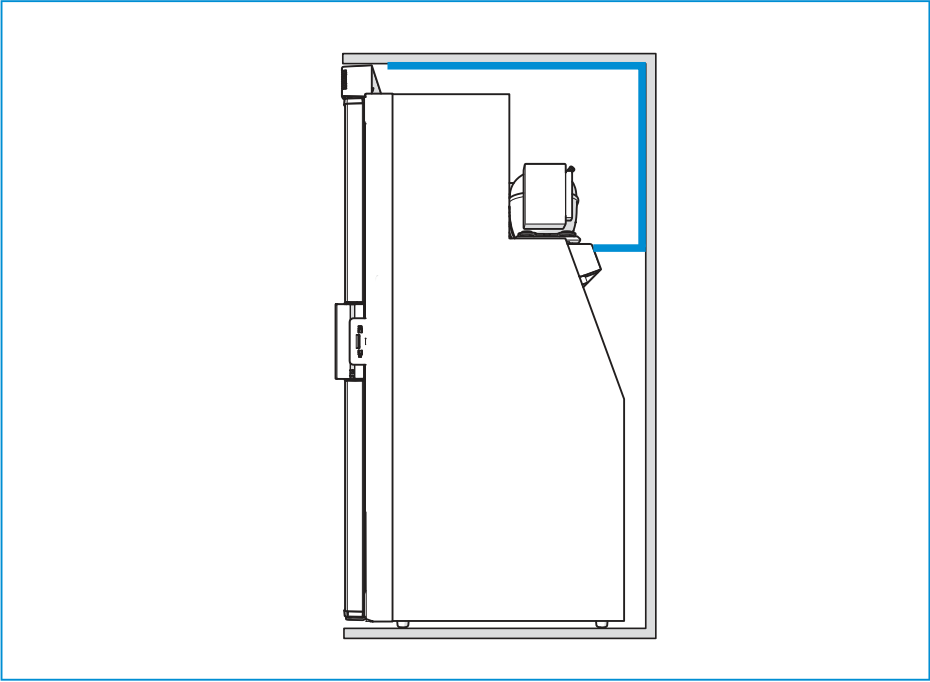
Installing insulation material is strongly recommended. It will considerably reduce the emitted noise and protects against heating up from outside the vehicle. For information on the correct type of insulation, contact the supplier.

- Install insulation on the back of the chassis.

Top model



Floor model



The insulation material should be left exposed and not covered by panelling to prevent unwanted reflection of noise.



Ensure that the insulation material is able to handle the temperatures and the mechanical loading expected during normal use.



Ensure that the insulation material does not diminish the minimal ventilation dimensions of the air ducts. Glued insulation material might detach over time and block the airways. Overheating of the system might be a result.



For the correct type of insulation, it is advised to use a polyurethane noise absorption panel with open cell structure, or similar.

- Make a cut-out in the roof panel, exposing the insulation material.
- Seal any gaps between furniture and chassis to prevent noise emission.

Separate control panel installation

The control panel can be installed on a separate place.

It is the responsibility of the OEM to install the separate control panel according to the electrical standard EN60335.



Only replace the wires which are directly connected to the control panel.

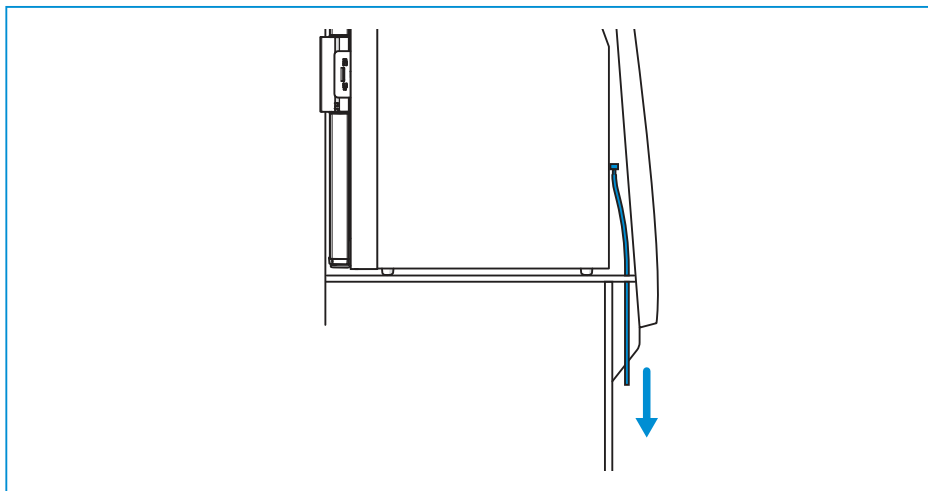


It is not allowed to change the electronics, only reposition the control panel.



The strain relief clip on the wire must remain in its position.

Drainage tube (T2090 only)



This refrigerator has the possibility to drain condensation directly to the outside. Then the end user does not have to empty the drip tray via the inside of the refrigerator. For this, you can extend with your own tube (external \varnothing 9mm, inner \varnothing 5mm) coming out of the refrigerator at the back, and guide this tube directly to the outside of the vehicle.

9. Connecting electrical supplies

- Use the following values to connect the power supply.

Table 4: Power supply values

DC	12V
Power requirement 12V DC	10.4-14.4V at the refrigerator
Cable dimensions (Cable thickness vs cable length)	<ul style="list-style-type: none">■ $2.5\text{mm}^2 = < 2.5\text{m}$■ $4\text{mm}^2 = < 4\text{m}$■ $6\text{mm}^2 = < 6\text{m}$
Fuse current	15A in power supply system near the power supply source
DC supply	Red cable (+) and white cable (-)
Battery capacity	Advised: 2 x 95Ah
12V power connector	Refrigerator: Stocko VV 2041.100-G or equivalent Supply cable counterpart: Stocko VV 2041.200-G or equivalent



The electrical connections have to comply with EN60335-1.



Connect the device to an on board battery in the vehicle. This battery should be exclusively intended for powering onboard devices. Connecting to the engine battery is not suitable.

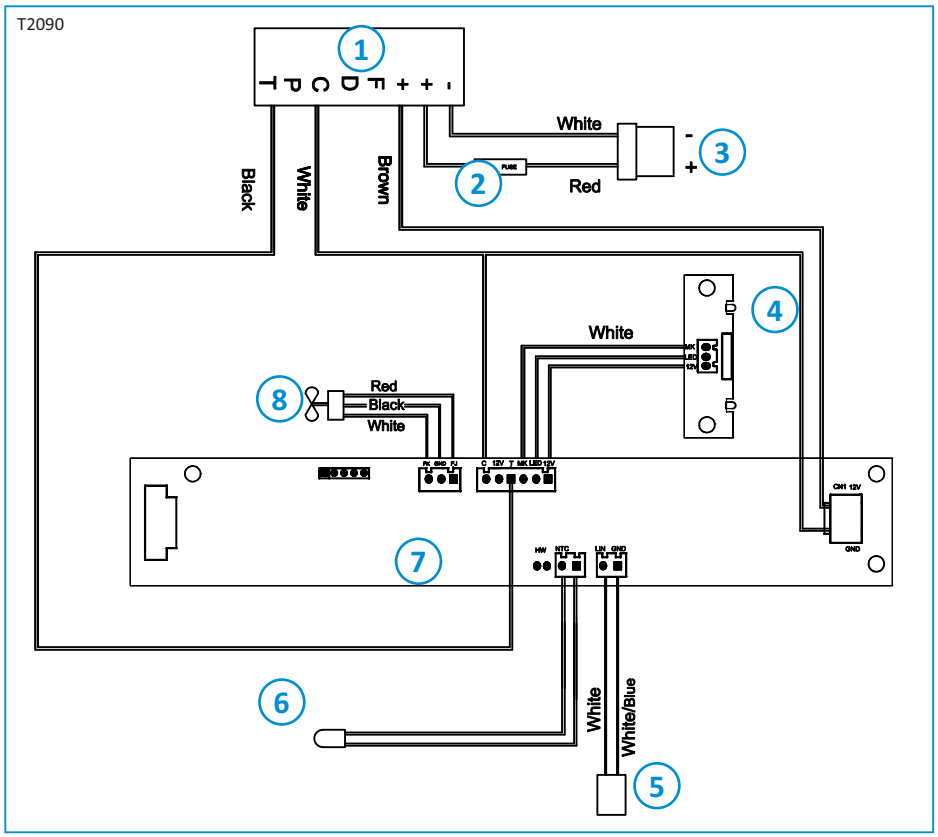


Ensure that wires can't come into contact with hot or sharp parts.

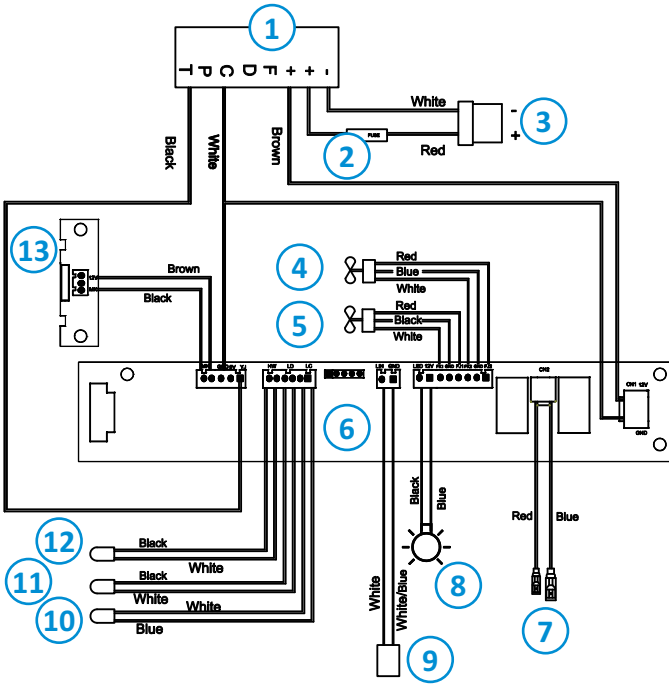


The 12V power supply wiring should incorporate a general main switch that enables all pole disconnection of the 12V appliances from the 12V power supply source.

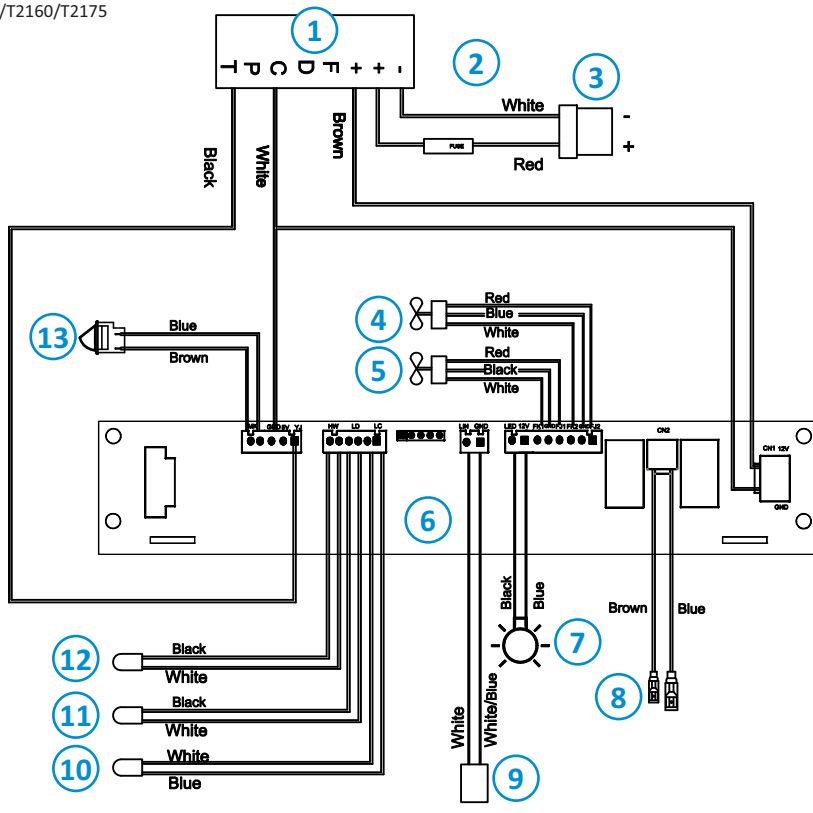
■ Wiring diagram:



1. Main PCBA cooling unit
2. Fuse 15 A
3. Input power 12V DC
4. LED module
5. CI-BUS connection
6. Interior refrigerator thermistor
7. Display module
8. Fan cooling unit

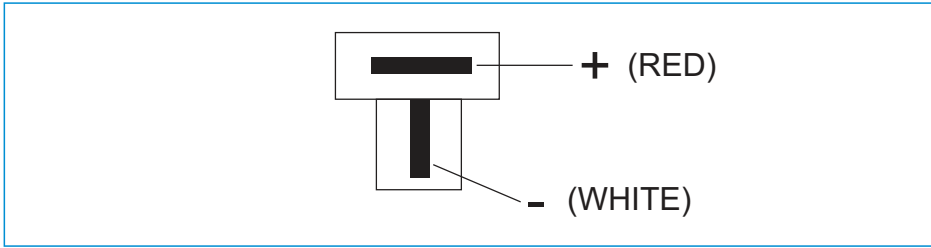


1. Main PCBA cooling unit
2. Fuse 15A
3. Input power 12V DC
4. Interior fan
5. Fan cooling unit
6. Display module
7. 2-way valve
8. Interior light
9. CI-BUS connection
10. Interior refrigerator thermistor
11. Interior freezer thermistor
12. Ambient temperatures thermistor
13. LED module



1. Main PCBA cooling unit
2. Fuse 15A
3. Input power 12V DC
4. Interior fan
5. Fan cooling unit
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8. 2-way valve
9. CI-BUS connection
10. Interior refrigerator thermistor
11. Interior freezer thermistor
12. Ambient temperatures thermistor
13. Interior light switch

- Connector layout of the input power 12V DC:



Connectivity

To connect the refrigerator to the compatible central control board of the vehicle, use the CI-bus protocol (please refer to www.civd.de).

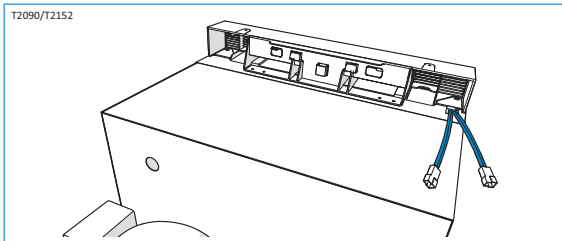


Any error messages coming from the refrigerator and shown on the master display, should not disturb the driver. For example: lights and/or sounds coming from the master display while driving.



There is no load dump protection circuit present on the CI-bus refrigerator electronics. Theford requires that a load dump circuit (which complies with the relevant regulations) is installed on the CI-bus master if the refrigerator is connected to the CI-bus.

For models T2090 and T2152 the CI-bus connection point is located behind the control panel:



For models T2138, T2160 and T2175 the CI-bus connection point is located on the back-bottom:

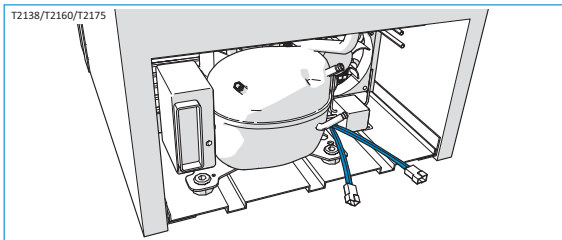
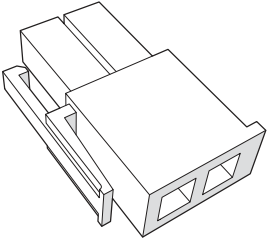
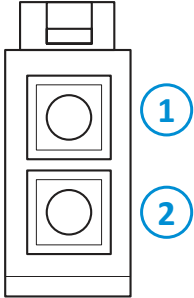
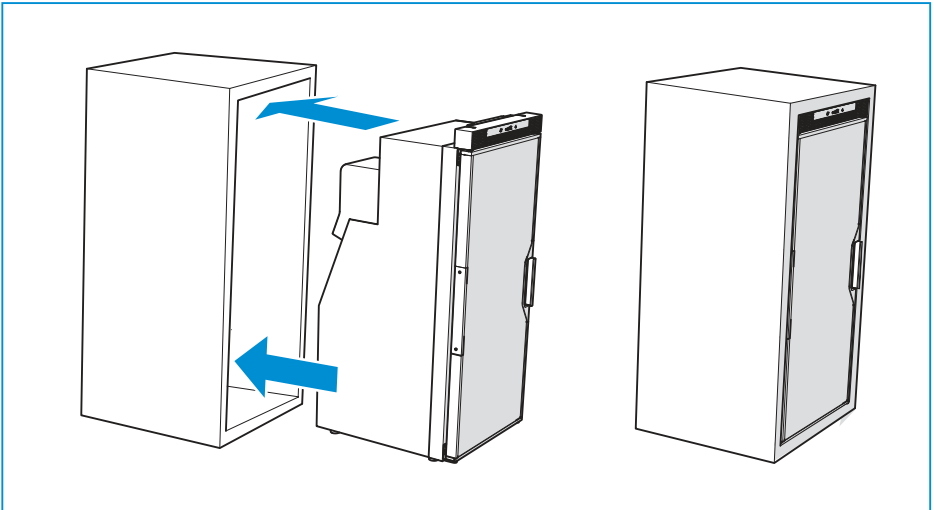


Table 5: CI-bus connectors

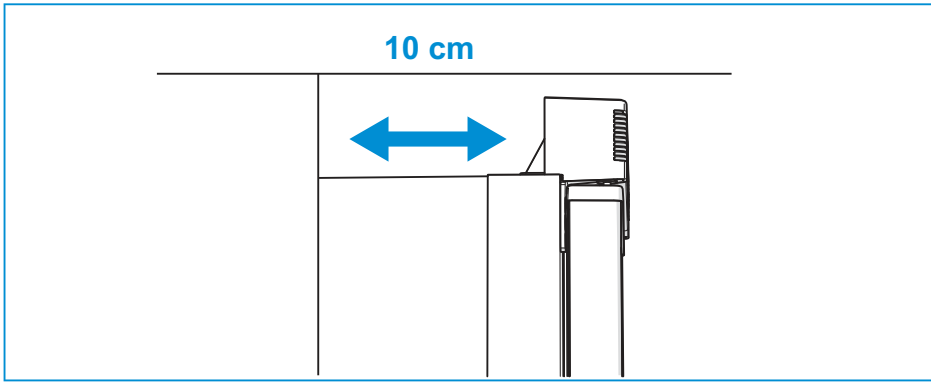
CI-bus connector plug on refrigerator	CI-bus connector plug counter part
<ul style="list-style-type: none">■ Mini-Fit Jr. connector (male) supplier Molex, P/N 39012020■ Cable length: 90 mm	<ul style="list-style-type: none">■ Mini-Fit Jr. Mini-Fit Jr. connector (female) supplier Molex, P/N 39012021
	 <ol style="list-style-type: none">1. Data (pink)2. Mass (grey)

10. Mounting the refrigerator

- Mount the refrigerator in a stable furniture.



- Place the refrigerator partly into the furniture, allowing 10cm free at the top of the refrigerator.



- Connect the power connector with the 12V power connector in the vehicle.

For models T2090 and T2152:



It is advised to have the power supply in the vehicle to be routed via the roof. In this way an over-length of cable is not needed and the power supply cable cannot block the airways.

For models T2160, T2175 and T2138:



Connect the 12V power connector before any furniture is mounted. Make sure that the 12V and CI-bus cable are not trapped between the refrigerator and furniture.

- Slide the refrigerator to the back of the furniture.

- Use a screw suitable for below hole dimensions.

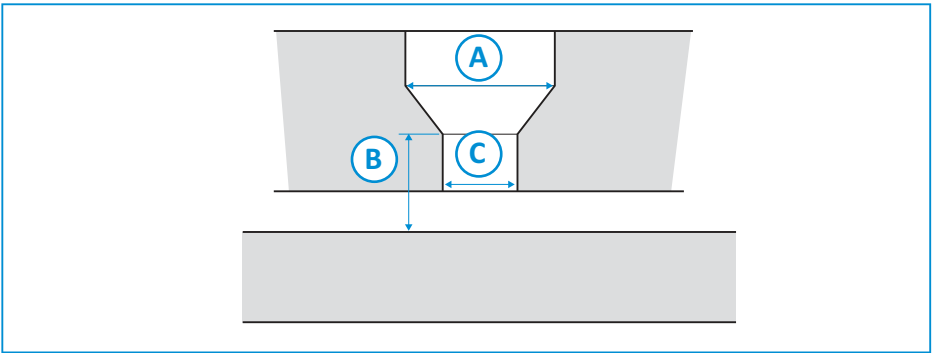


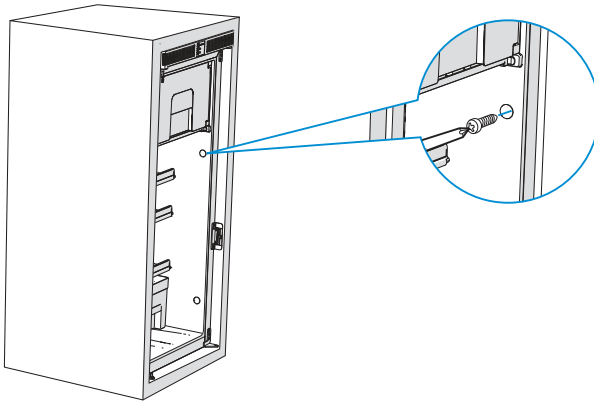
Table 6: Hole dimensions

	T2090	T2152		T2138	
	side	side	floor	side	floor
A	Ø 9mm	Ø 9mm	Ø 9mm	Ø 9mm	Ø 6mm
B	6mm	6mm	34mm	6mm	5mm
C	Ø 4.0mm	Ø 4.5mm	Ø 4.5mm	Ø 4.5mm	Ø 6mm

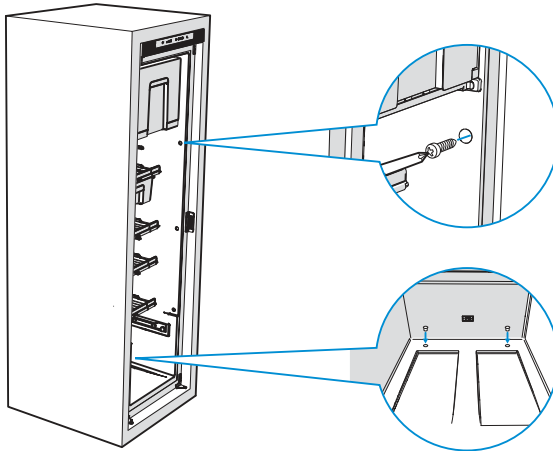
	T2160		T2175	
	side	floor	side	floor
A	Ø 9mm	Ø 5mm	Ø 9mm	Ø 5mm
B	6mm	11mm	6mm	11mm
C	Ø 4.5mm	Ø 5mm	Ø 4.5mm	Ø 5mm

- Fixate the refrigerator with the screws, using the predrilled positions in the cabinet.

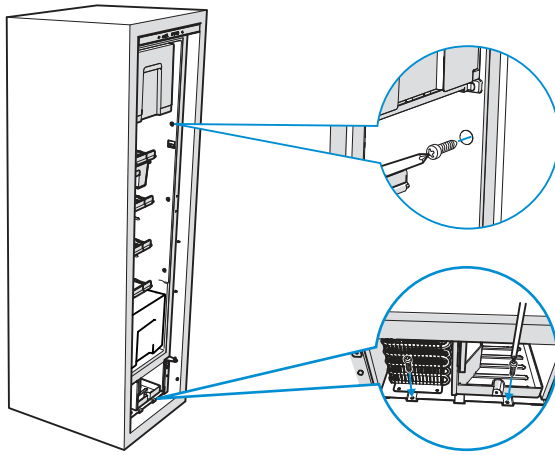
T1090



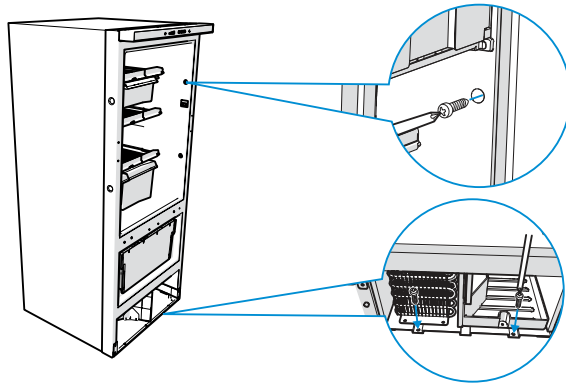
T2152



T2138



T2160/T2175



- Use the white caps for finishing.



Ensure that the furniture panelling is able to handle the forces created by the connection.



Do not screw into the refrigerator cabinet.



The refrigerators are prepared for flush build in.

11. Ventilation

The refrigerator performance depends on good ventilation. Ventilation for T2090 and T2152 takes place through the front vent openings in the refrigerator. Ambient air enters through the bottom vent at the front and the, by the cooling system, heated air is pushed away via the top vent opening.

Ventilation for the T2138, T2160 and T2175 takes place through the integrated and insulated cooling unit box at the bottom part of the refrigerator.

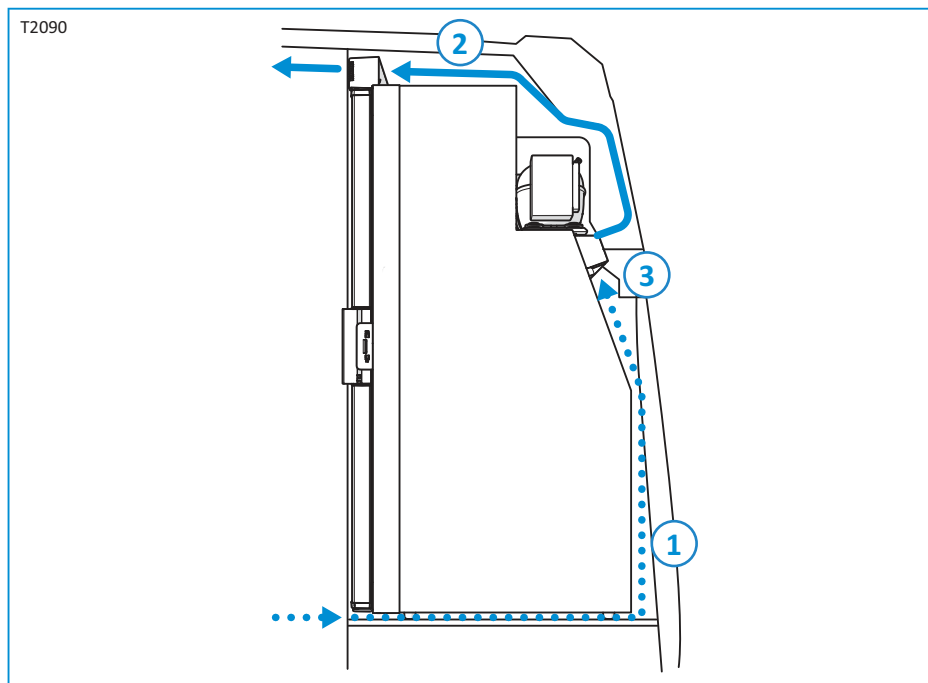


Ensure that the top and bottom vent openings are not obstructed and are able to vent freely.



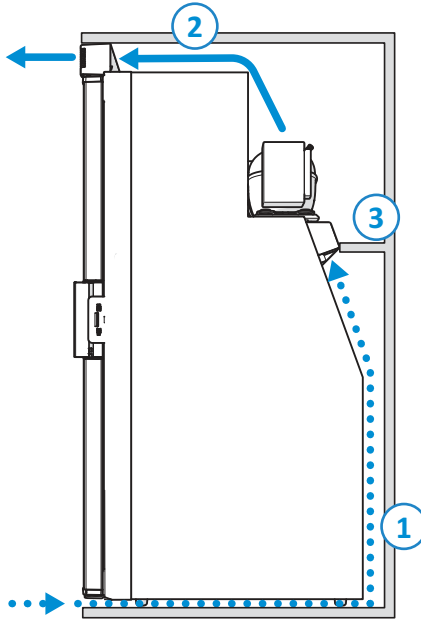
The bottom vent opening has no filter. For all models, placing a filter is not needed and might lead to poor performance.

Top model

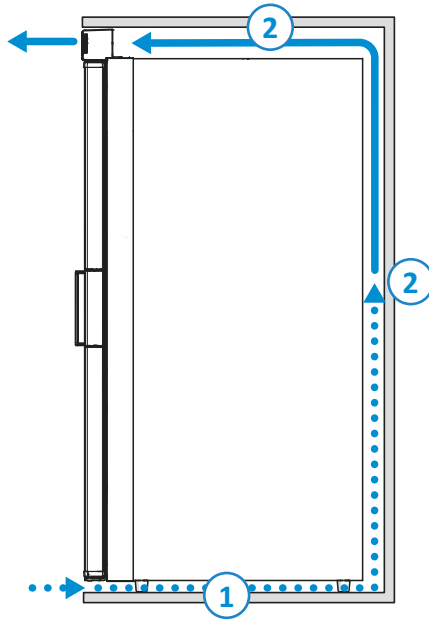


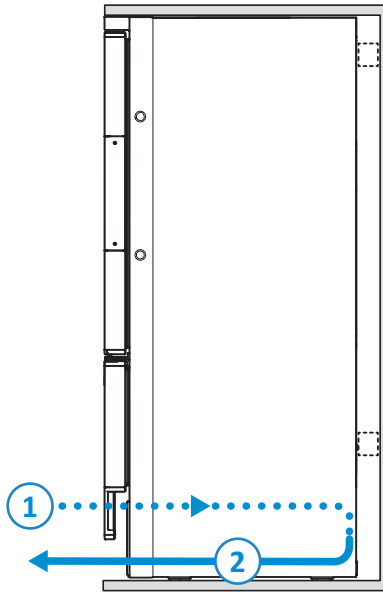
Floor model

T2090



- Ensure that the minimal distance [1] between the refrigerator and the bottom and the back is 20mm.
- Ensure that the minimal distance [2] between the refrigerator and the back and the top side is 40 - 50mm.
- Ensure the sealing material closes the gap [3] between the air funnel and the chassis beam (T2090 floor model only).





For T2138: Do not place insulation material of the vehicle directly against the backside of the fridge. This may cause condensation issues.



For T2160 and T2175: Do not remove stops at the back of the fridge. Removing this may result in condensation issues.

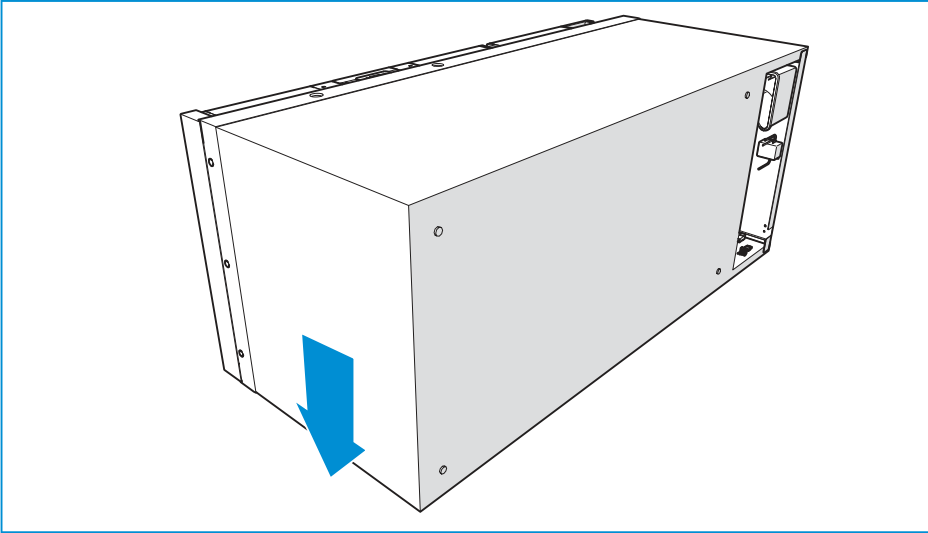
12. Installing door panel

To match the refrigerator with the interior, a door panel can be installed as shown below.



The door panel for the door should be fitted before installing the refrigerator.

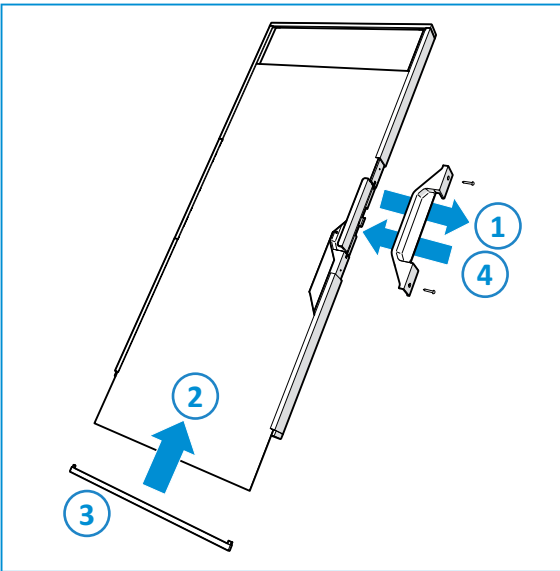
- Place the refrigerator on its side, refer to the handling sticker on the side of the refrigerator ["This side up allowed during handling"].



Never lift or handle a refrigerator at the power supply cables.



Always pay attention to the label on the side of the refrigerator: "This side up allowed during transport and handling".



1. Remove the door handle.
2. Slide the panel in the frame of the door
3. Click the panel retainer in place.
4. Install the door handle cover and put the screws in.

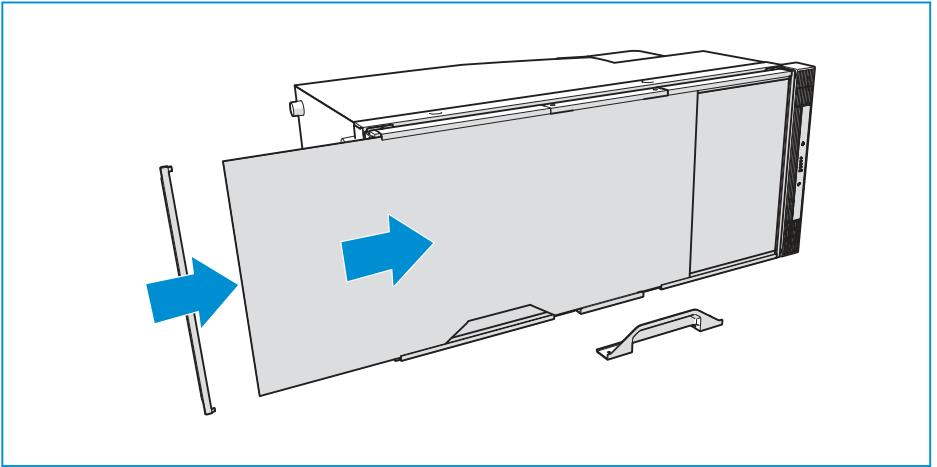
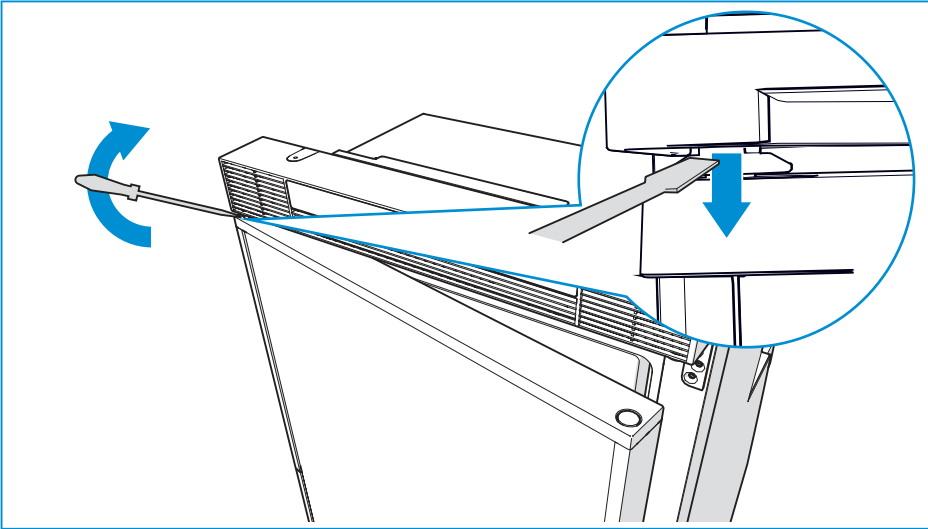


Table 7: Panel sizes

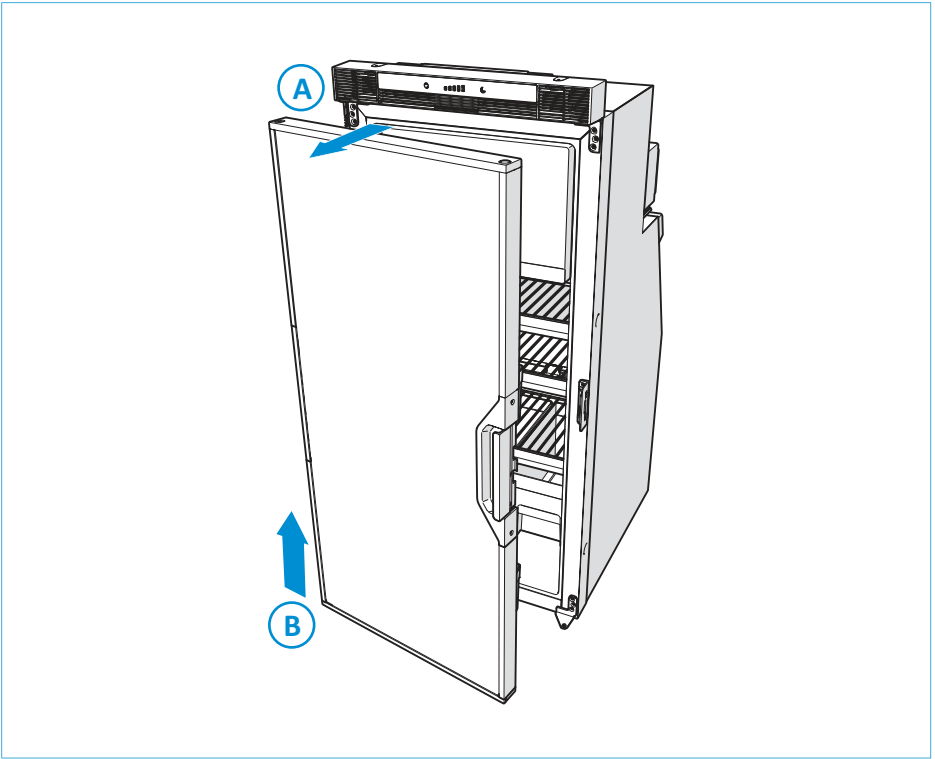
Model	Door type	Panel size (mm)
T2090	Flat	H 877 x W 399
T2152	Flat	H 1394 x W 399
T2138	Flat	H 1366 x W 396
T2160	Flat cabinet	H 700 x W 499
	Flat drawer	H 382 x W 499
T2175	Flat cabinet	H 700 x W 499
	Flat drawer	H 382 x W 499

13. Door conversion

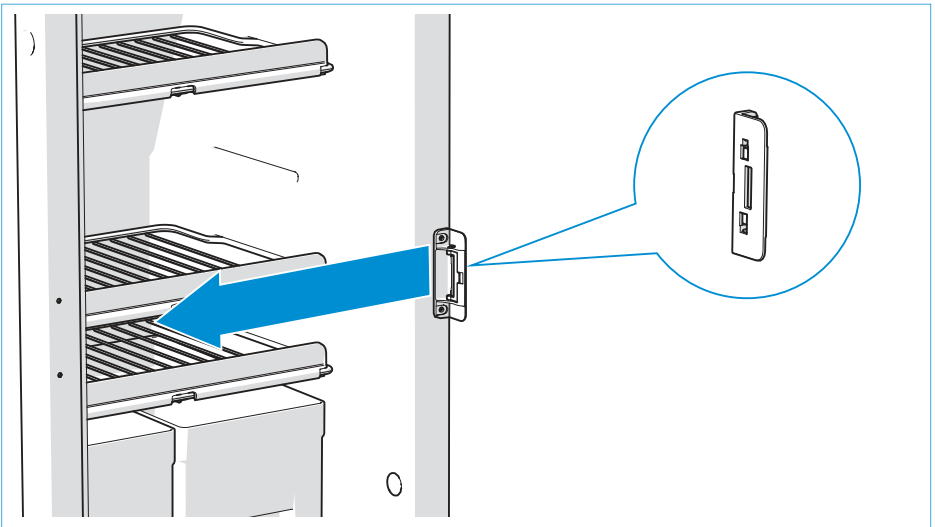
- Open the door a little and remove the hinge pin.



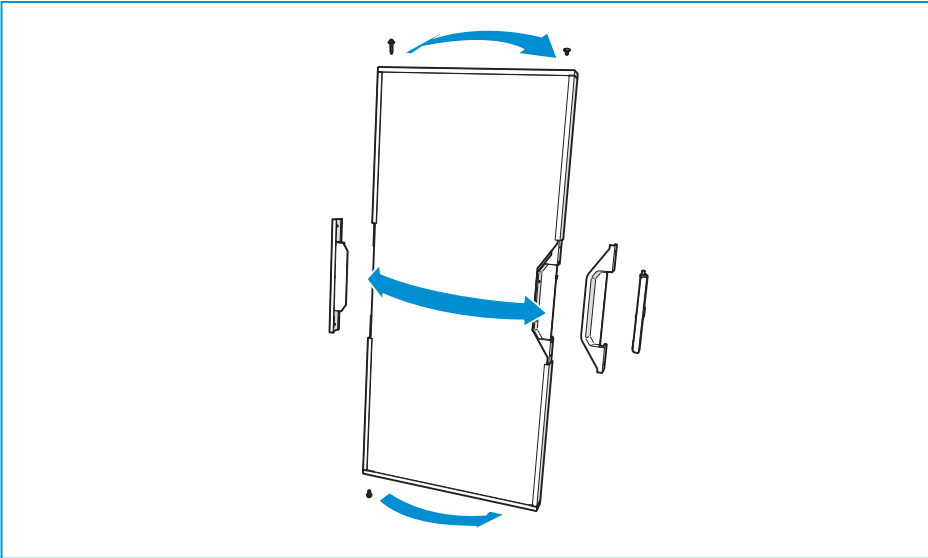
- Lift the door out of the hinges.



- Move the lock on the refrigerator from one side to the other.



- Move the hinges, handle, hinge pin and hinge hole plug from one side to the other on the door.
- Turn the doorpanel 180 degrees.



14. Warranty and servicing

For our warranty procedure and policy, refer to www.thetford.com.

All servicing must be carried out by an authorized person. Before any service work is started, the appliance must be disconnected from the electrical supplies.

For service, please contact your authorised local Service Centre giving details of the model and serial number on the Serial ID label plus date of purchase.



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