

Legacy SMART Portable Refrigerator

User Manual



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Safety information

Failure to follow these instructions may result in damage to the appliance or injury to yourself and others.

- Suitable for camping use.
- This product is not designed for marine applications.
- Do not expose the appliance to water, rain, corrosive liquids or strong chemicals.
- Do not operate near explosive or flammable gases or materials.
- Do not operate or store in high-temperature environments.
- Always operate this product on a stable surface.
- Do not invert the refrigerator during operation or storage.
- Do not store explosive or hazardous materials inside the fridge.
- Do not use in restricted spaces or areas with limited ventilation.
- Do not block or cover the ventilation holes.
- Do not push objects of any kind into ventilation slots or holes.
- Do not use the appliance for purposes other than indicated in this manual.
- This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children being supervised not to play with the appliance.
- Do not attempt to service this product yourself. Refer to qualified technician.
- Ensure electrical supply meets the input specifications listed on the appliance rear panel.
- The appliance may be connected to more than one source of energy.
- WARNING : When positioning the appliance, ensure the supply cord is not trapped or damaged.
- WARNING : Do not locate multiple portable socket-outlets or portable power supplies at the rear of the appliance.
- Do not use damaged or modified power cables.
- Do not handle electrical cables with wet hands.
- Do not fill the interior with liquid or ice without suitable water-tight containers.
- Store foods in original packaging or suitable containers.
- Clean interior surfaces that may be in contact with food regularly.

This appliance is intended to be used in household and similar applications such as :

- Staff kitchen areas in shops, offices and other working environments.
- Farm houses and by clients in hotels, motels and other residential type environments.
- Bed and breakfast type environments.
- Catering and similar non-retail applications.

When used in a mobile environment :

- Secure the appliance with straps or a mounting fixture designed for this purpose.
- Ensure cables are not under tension and are protected from areas of movement.
- Ensure cables are not exposed to sharp edges or risk of crushing.
- Use the appropriate cable size and type for dedicated wiring circuits.

Introduction

Thank you for your purchase of a National Luna Legacy Smart refrigerator.

This product comes from a wide family of high-efficiency, high-quality refrigerators designed specifically for mobile applications or remote installations such as off-road vehicles, caravans, trailers and solar applications.

The SMART series inherits the rugged design and superior cooling performance of the LEGACY series and now also offers the ability to monitor and control the fridge operations wirelessly using the new NL CONNECT mobile application.

All models offer dual USB charge ports that support multiple high-speed charging protocols for mobile devices.

For compatibility with space-constrained applications, the NL35, NL45, NL50 and NL52 offer a main door that can be re-configured to open in a different orientation. In addition, all models offer a control panel that can be shifted between the front and side.

Every model can be powered directly from a 12V or 24V battery as well as 100V to 240V AC supply. Standard features include : LED interior lights, folding carry handles, bottle-opener, low-battery protection, automatic speed control and independent cooling on Double-Door and Dual models.

Models covered in this manual

Single compartment :	NL35, NL40, NL45, NL52, NL55, NL65, NL80, NL125
Dual compartment :	NL50, NL60, NL70, NL90
Double Door :	NL72, NL110
Side-mount (<i>specialty-modified versions of</i>) :	NL70, NL72, NL80, NL90, NL110, NL125

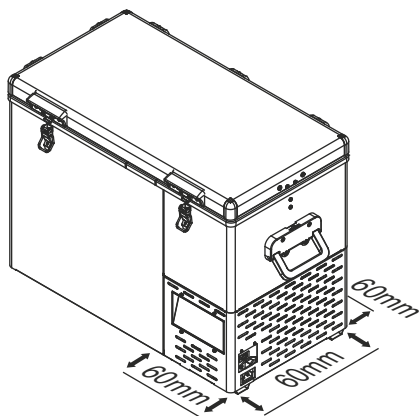
Symbols and terms used in this document

Some symbols are used in this manual or on the product.
These symbols have the following meanings :

	Electrical hazard. Risk of electric shock.
	Flammable. Risk of fire
	Important note. Please read carefully
	Tip or useful information
AC	Alternating Current electrical supply.
DC	Direct Current electrical supply.



Ventilation clearance



Slots and openings in the body are provided for ventilation; to ensure reliable operation and to protect against overheating, these opening should never be blocked or covered.

A minimum clearance of 60mm is recommended on the back, side and front of the fridge for ventilation.

This product should never be placed in a built-in installation with limited airflow unless adequate ventilation is provided.

Closed compartments should provide for cool air intake and warm air exhaust.

Guide to electrical wiring

This appliance is optimised for mobile use. Standard 12V accessory sockets used in many motor vehicles can be used but may result in unreliable operation due to thin wiring and high voltage loss. For long-term reliable operation in a motor vehicle or other mobile application, it is recommended to install dedicated 12V / 24V wiring and suitable DC-rated connectors.

A minimum cable gauge of 4mm² (12 AWG) should be used between the fridge and power source (battery). For safety, a 15A fuse should be installed close to the battery on the positive cable.

When connecting the AC supply, make sure the cable plug is appropriate for the region or country of use and the cable is not damaged. Verify the AC supply voltage is within the fridge operating voltage range. Do not place AC plug adaptors or power supplies on or behind the fridge.

Protect all cables from potential damage, particularly in applications where the fridge or cables are likely to move, such as in sliding or drawer systems. Protect the cables from sharp edges and areas that may be exposed to high heat.



DO NOT use a modified or damaged power cable. Doing so may result in serious injury or damage to the appliance.



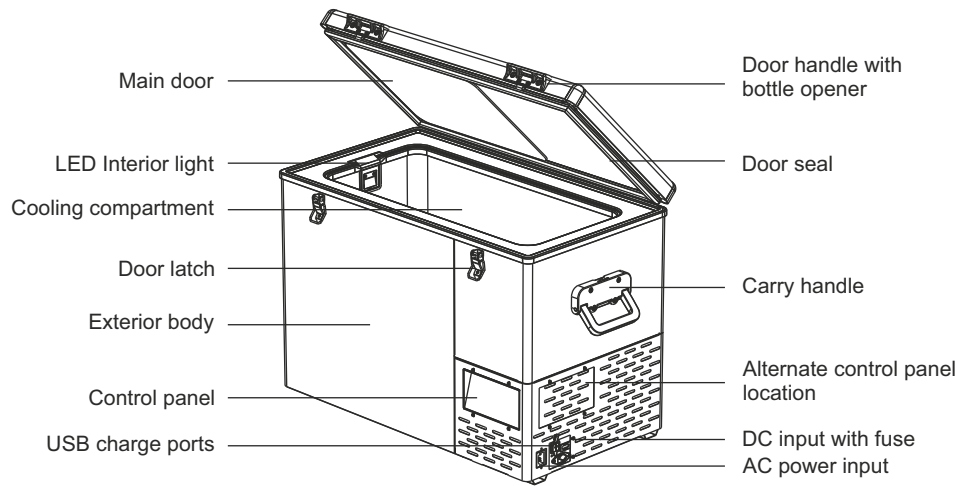
If dedicated wiring is installed to supply the fridge, a 15A fuse should be fitted on the positive cable near to the battery.



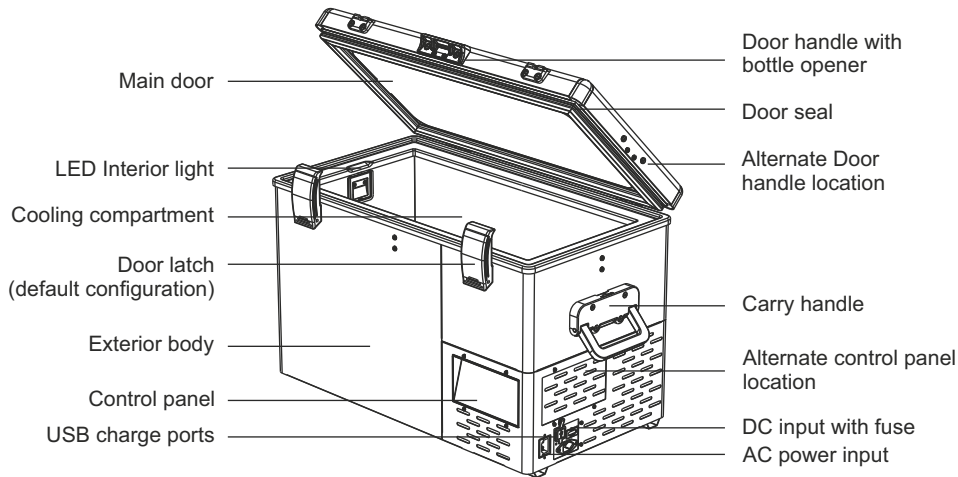
Before installation of any additional wiring, check that this action will not void any vehicle warranty or service agreement.

External features - Single compartment

Single Compartment models : NL40, NL52, NL55, NL65, NL80, NL125

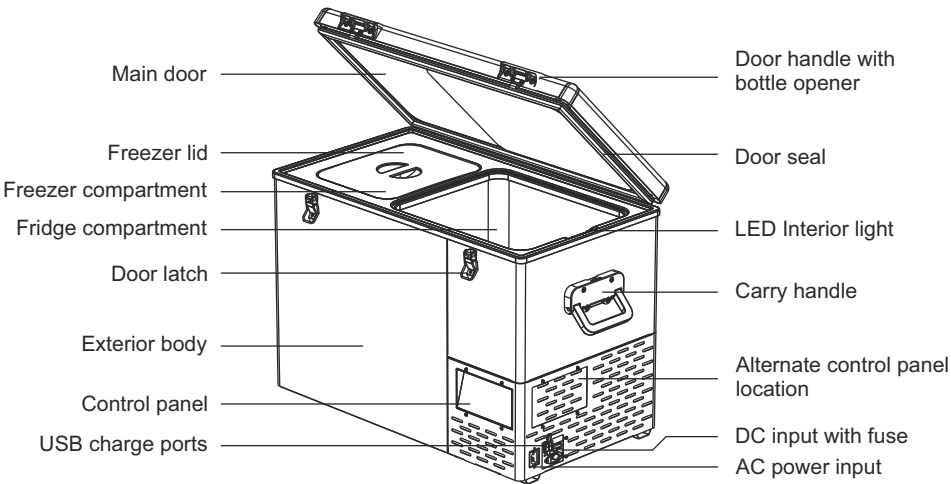


Single Compartment models : NL35, NL45

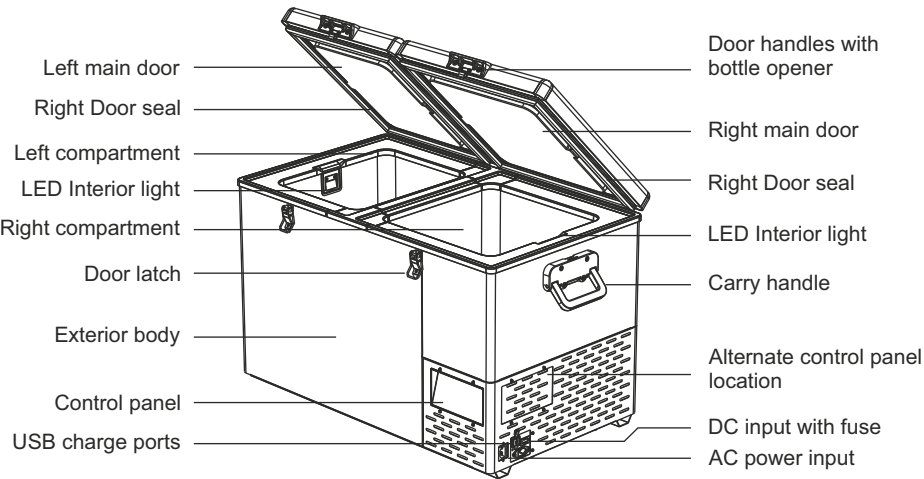


External features - Dual Compartment and Double Door

Dual Compartment models : NL50, NL60, NL70, NL90



Double Door models : NL72, NL110

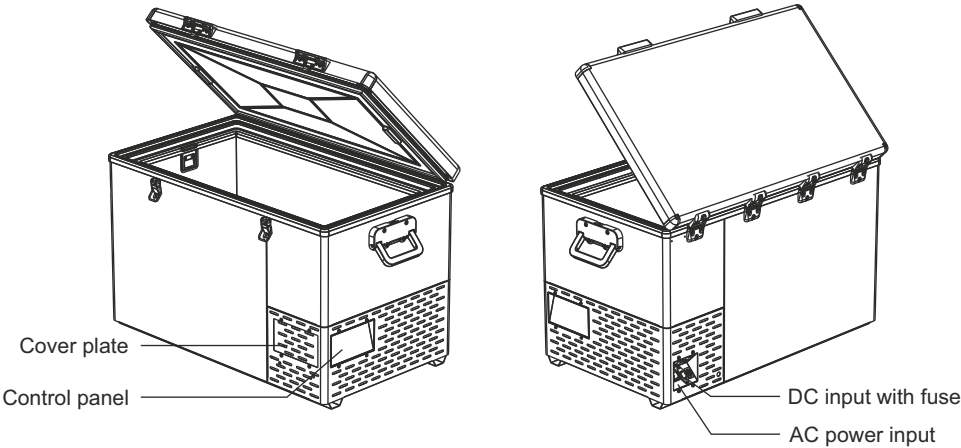


External features - Side-mount

Side-mount models are specially-modified versions of single or dual-compartment models.

This modification can only be applied to NL70, NL72, NL80, NL90, NL110 and NL125 models.

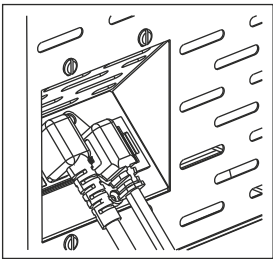
The control panel and power inputs have been shifted to better fit specific applications where there is limited access to these features, such as trailer sliding systems.



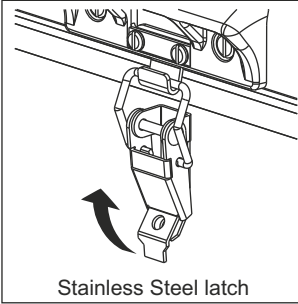
The AC and DC power inputs are recessed on side-mount models.



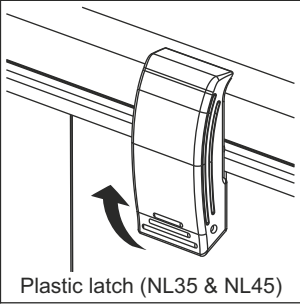
Side-mount models do not have USB charge ports.



Latches and Handles



Stainless Steel latch



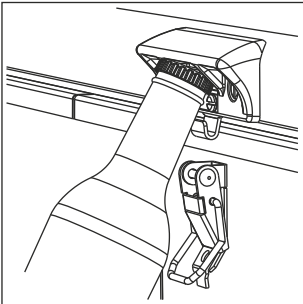
Plastic latch (NL35 & NL45)

Depending on the model, the fridge will have one or two door latches which are used to keep the main door closed securely.

Stainless steel latches provide a locking hole that can be used with locks or tamper-evident seals.

The plastic latches are only on the NL35 and NL45 models.

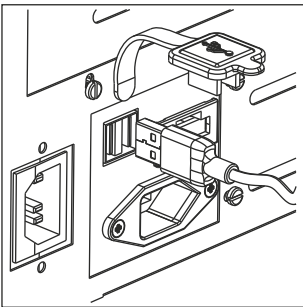
Bottle-opener strip



Each door handle has an integrated bottle-opener strip. This can be used to remove standard bottle caps.

Hook the bottle cap on the metal strip and pull the bottle upwards against the handle to detach the bottle cap.

USB charge ports



There are two independent USB-charging ports available on the side.

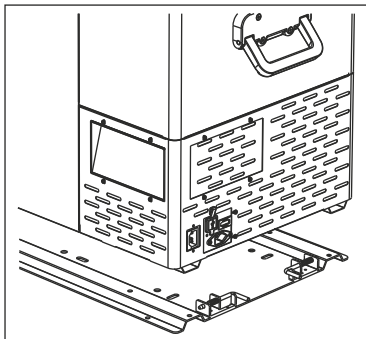
Each port is capable of fast-charging up to 24W maximum power and will be active when the fridge is connected to DC or AC power sources.



USB charge ports remain active if the fridge is in standby mode.

USB charge ports are not affected by low-battery protection.

Securing fridge in a mobile application

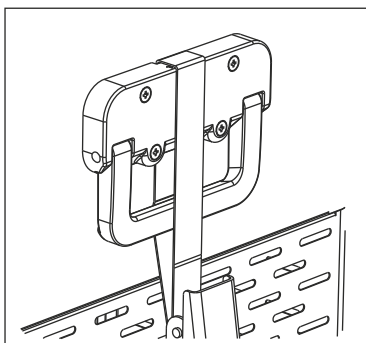


Using a base plate *(optional accessory)*

It is recommended to use a base-locking plate (available separately) to secure a fridge in a mobile application.

The base plate is usually bolted to the vehicle load area or onto a sliding mechanism and allows the fridge to be secured without additional straps.

The fridge slide-locks onto the base-plate and is secured in place with locking pins.



Using straps

Carry handles each feature a tie-down slot that can be used with standard 25mm straps. These can be used to secure the fridge to tie-down points.

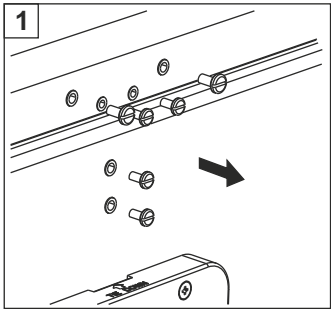
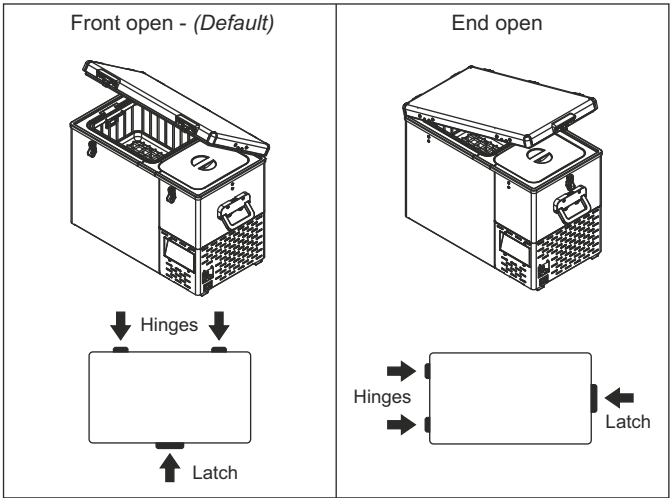
Take care not to over-tighten straps as this can cause damage to the handles or fridge body.



Only use the provided tie-down slot.
Do not strap to the folding hand-hold.

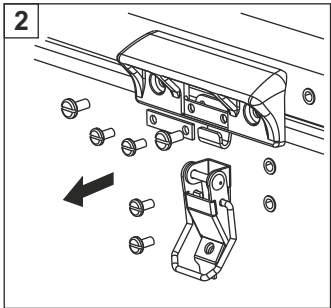
Changing door configuration - NL50 and NL52 models

NL50 and NL52 models have the ability to shift the door opening direction from the front to the side. This can be useful for applications with limited access.



Prepare new handle and latch position

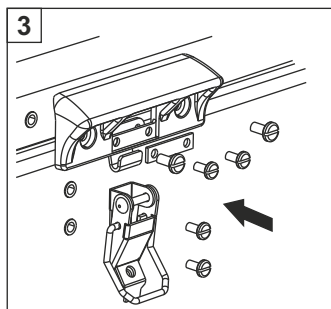
Remove the screws from the new handle and latch location.



Remove the door handle & latch

Remove the door handle and latch from their current location. The handle includes a metal latch hook and bottle-opener strip. Take note of the order they are removed.

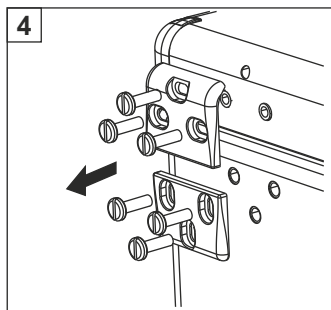
Changing door configuration - NL50 and NL52 models



Attach handle & latch

Using the same screws, attach the handle and latch to the new location. Note that the metal door hook fits underneath the plastic handle.

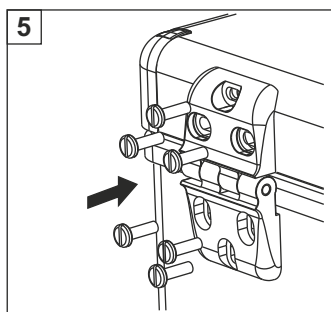
Align the lower latch to the door hook and tighten the screws.



Remove hinge covers & hinges

Prepare the new hinge locations by removing the upper and lower covers.

Remove the hinges from their current location.

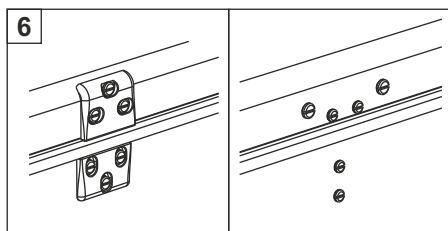


Attach hinges

Attach the loose hinges to their new locations using the same screws.

It is best to attach the lower half of the hinge to the fridge body first.

Before tightening the screws, check the tension on the lid seal. (refer to page 29 for details)



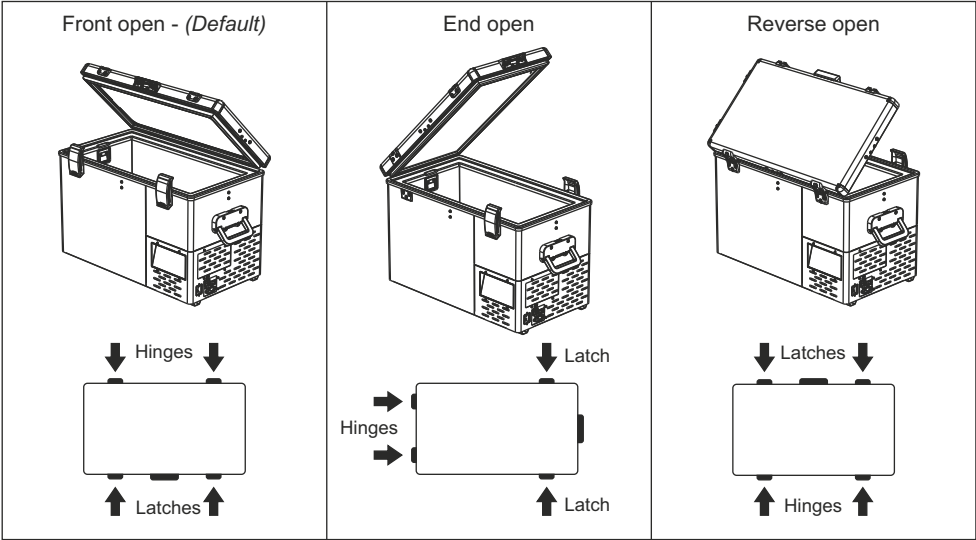
Cover unused locations

Use the hinge covers removed earlier to cover the unused hinge locations.

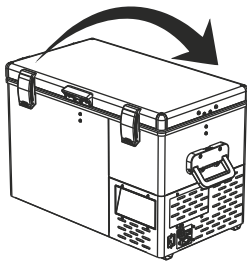
Insert the remaining screws from the door handle into the unused holes.

Changing door configuration - NL35 and NL45 models

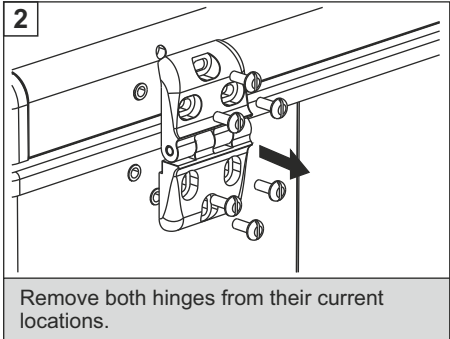
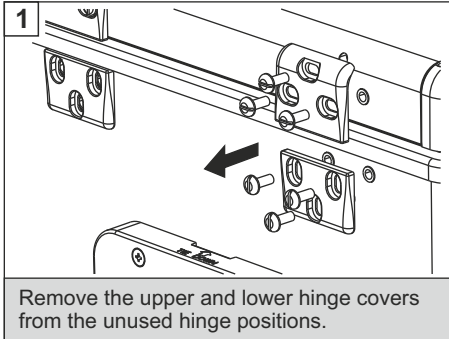
The unique door design and updated door latches of the NL35 and NL45 models allows the lid to be configured to open from the front, end or in the reverse direction to better suit a particular application.



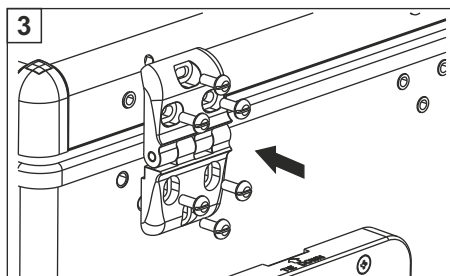
The below procedure shows changing from the default front-opening configuration to the end-opening configuration.



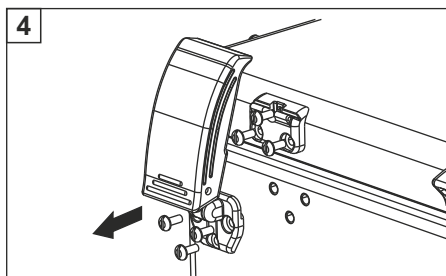
When changing between front and end-opening, only one latch needs to be moved.



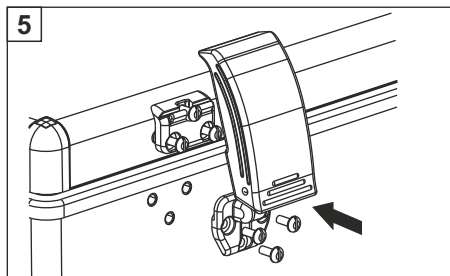
Changing door configuration - NL35 and NL45 models



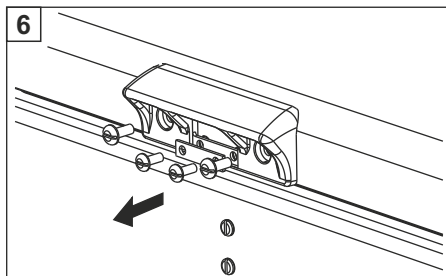
3
Attach the hinges to their alternate locations and adjust door alignment to the body.



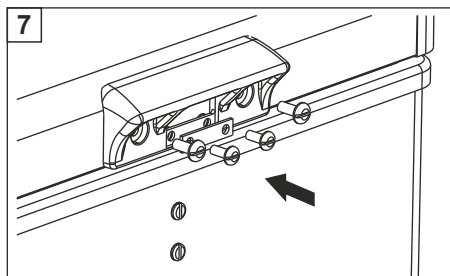
4
Remove the upper and lower door latches. In most cases, only one latch needs to move.



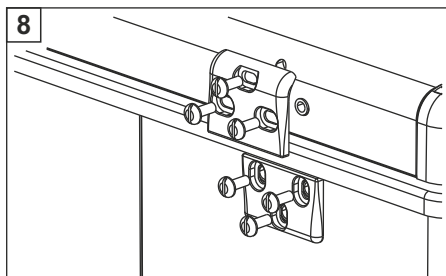
5
Attach the upper and lower door latch to the alternate position. Adjust if necessary.



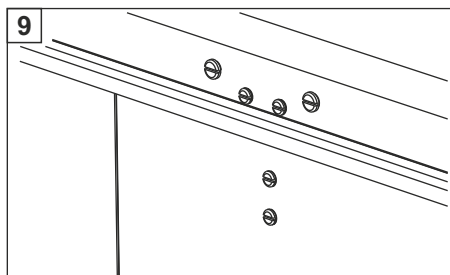
6
Remove the door handle with bottle-opener strip from its current location.



7
Re-attach the door handle to its alternate location.



8
Cover the unused hinge locations with the upper and lower hinge covers.

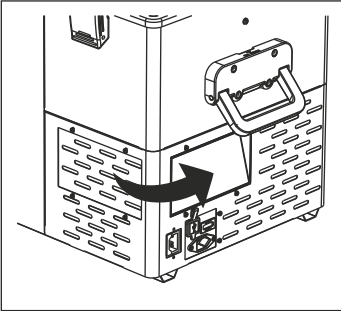


9
Secure the remaining screws in the door handles' previous location.

After re-configuring the door, the seal tension should be adjusted.

Refer to page 29 for this procedure.

Changing control panel position



The control panel can be moved from its default front-facing position to the alternate end-facing position.

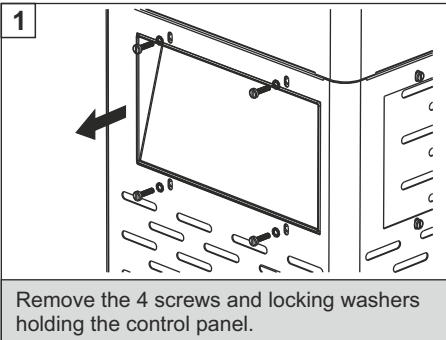
This configuration is useful for applications where the front is not easily accessible, such as in drawer systems.

CAUTION

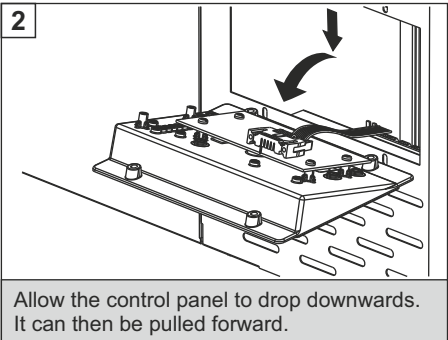


Moving the control panel can be technically challenging and damage can occur if this procedure is not undertaken carefully. This procedure should be performed in an environment suitable for electronics with appropriate anti-static precautions observed.

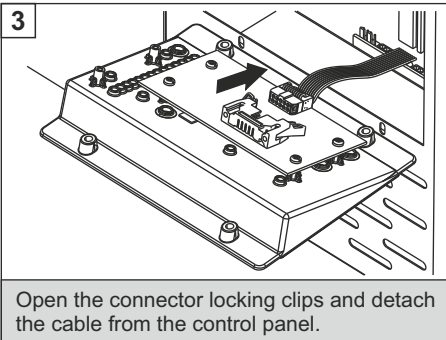
Ensure all power sources are disconnected before starting this procedure.



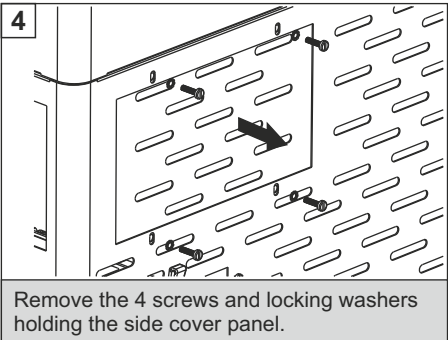
Remove the 4 screws and locking washers holding the control panel.



Allow the control panel to drop downwards. It can then be pulled forward.

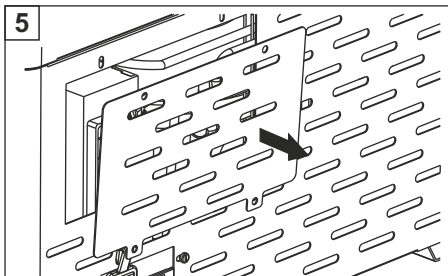


Open the connector locking clips and detach the cable from the control panel.

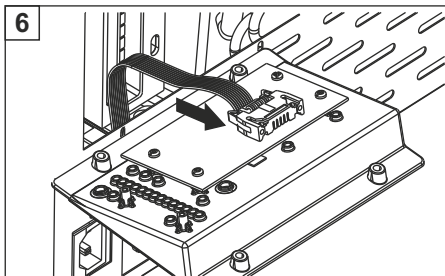


Remove the 4 screws and locking washers holding the side cover panel.

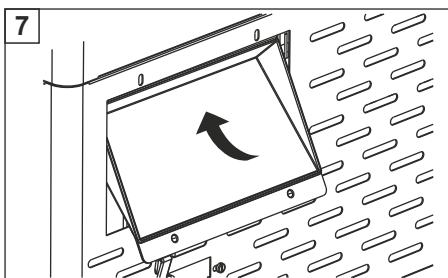
Changing control panel location



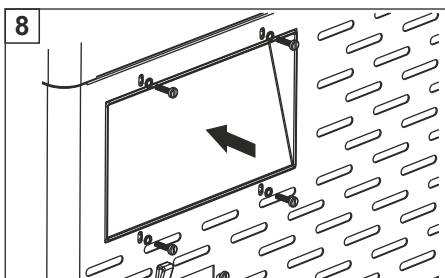
The cover panel can be tilted and removed from the side opening. Set it aside.



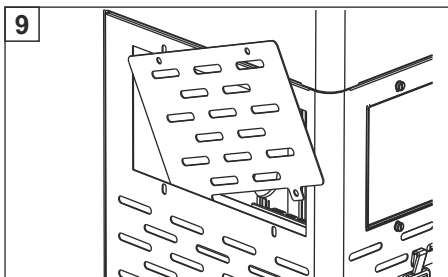
Pass the cable detached earlier through the side opening and attach to the control panel.



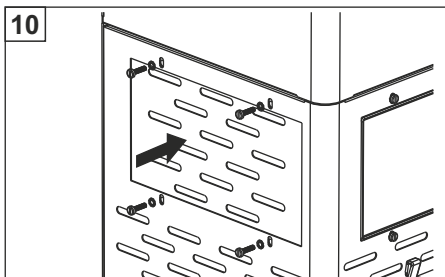
Install the control panel into the side opening, passing the top edge in first.



Align the control panel with the opening and insert the screws and lock washers.

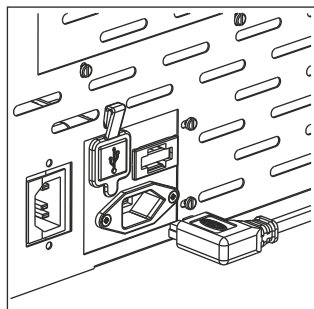
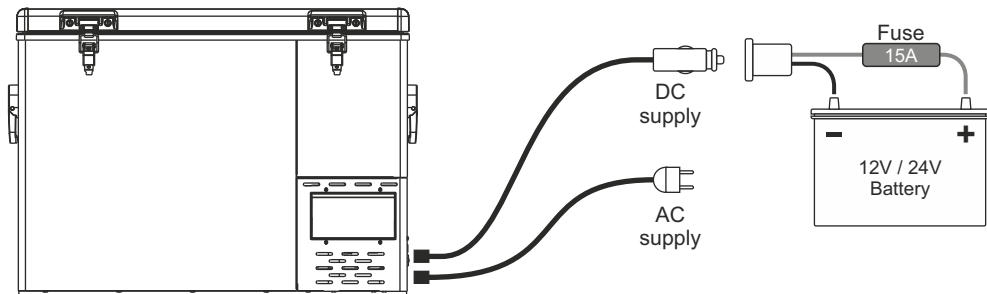


The loose cover plate can be installed into the front opening.



Hold the cover plate in place and install the remaining screws with lock washers.

Connecting power



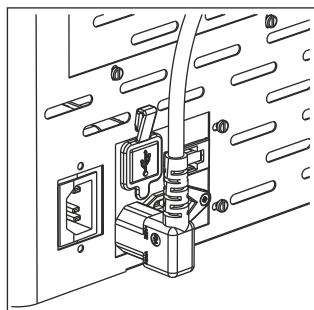
DC supply input

For battery-powered applications, connect the supplied DC cable (or approved replacement) into the DC input socket and ensure it is properly inserted.

Connect the other end to the DC power source.



Ensure polarity is correct before connecting the DC supply. Incorrect polarity may result in permanent damage.



AC supply input

For AC power sources, connect the supplied AC cable (or approved IEC cable) to the AC input socket and ensure it is properly inserted.

Connect the other end to the AC supply.



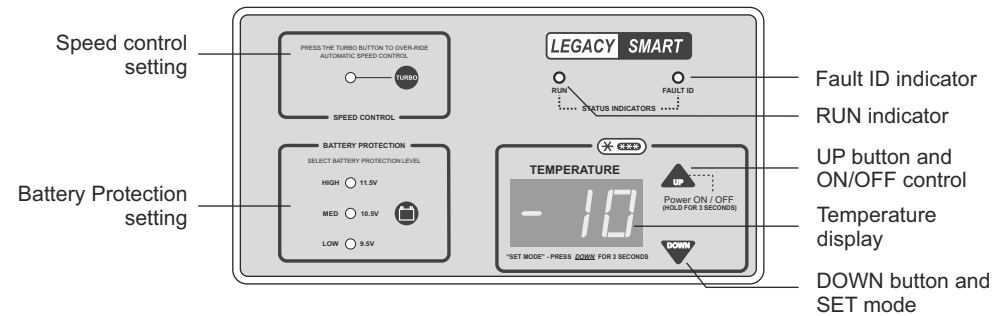
AC and DC supply can be connected simultaneously. The fridge will switch between the available power sources automatically. Priority is given to AC power.

User interface

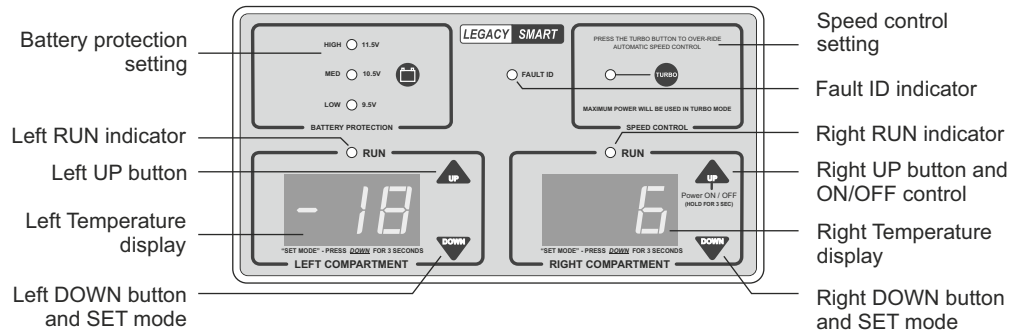
Depending on the fridge model, the control panel will provide either a Single or Dual temperature interface.

Both types provide Battery Protection and Speed control settings as well as Fault and Run status indicators.

Single control panel



Dual control panel

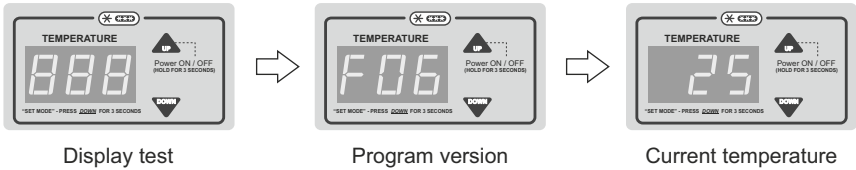


Start display sequence

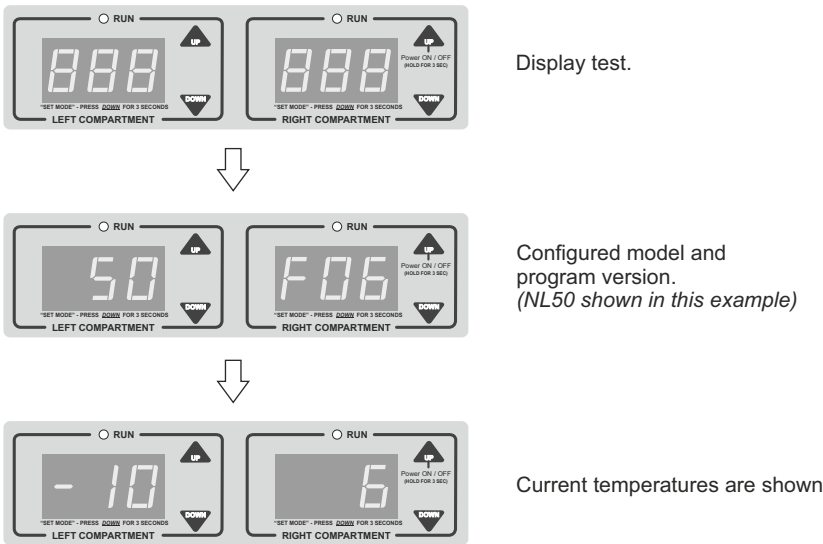
When power is applied to the fridge, the control panel will display a start sequence. During this initialization period, all digits will be turned on, followed by a version number. This identifies which program version the fridge is running.

The sequence ends with a display of the currently-measured temperature. The fridge is now ready for operation.

Single compartment models

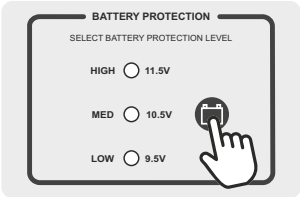


Dual compartment models will show the configured model on the left display and the program version on the right display.



If the configured model number does not match the physical model of the fridge there can be unexpected behavior. Contact technical support for instructions on how to reset the model configuration.

Battery protection



Battery protection is used to prevent excessive discharge and potential damage to a source battery. The choice of setting will depend on the specific application.

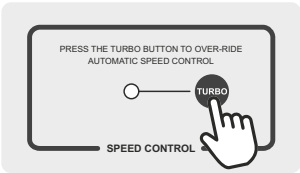
Press and hold the battery button to cycle through available options.

- HIGH** is recommended when powering the fridge from a vehicle main battery. This provides the highest protection level.
- MED** is recommended for most applications where a deep-cycle auxiliary battery is used to power the fridge.
- LOW** can be used to prioritize fridge run-time over battery discharge.

12V	STOP	RESTART
HIGH	11.5V	12.5V
MED	10.5V	11.8V
LOW	9.5V	10.9V

24V	STOP	RESTART
HIGH	24.6V	26.0V
MED	23.0V	24.5V
LOW	21.3V	22.7V

Speed control



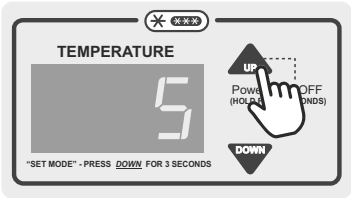
Under normal conditions, the fridge will automatically balance cooling performance and efficiency. This is preferred for most applications.

TURBO mode will increase cooling performance but at the expense of increased energy consumption.

The TURBO mode can be toggled by holding the TURBO button for 3 seconds.

TURBO mode may increase power consumption.

Standby mode



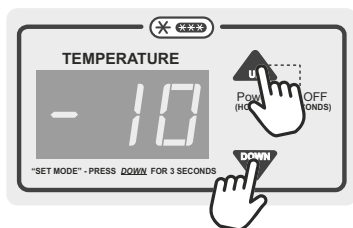
The fridge can be put into a standby mode by holding the UP button for 3 seconds.
(right compartment control on Dual models)

Press and hold the UP button again to exit standby and return to normal operation.

The ON/OFF state is saved if power is removed. This setting is restored when power is applied.

When in standby mode, the fridge interior light and USB ports will remain operational.

Choosing the temperature display units (°C / °F)

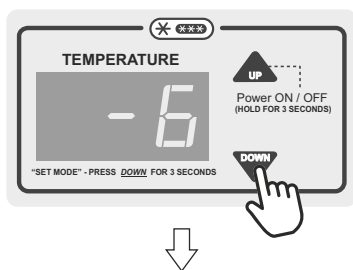


The temperature display units can be toggled between °C / °F by briefly pressing both UP and DOWN buttons together.

The display will then change to the selected units.

On Dual models, press the two buttons on the Right Compartment.

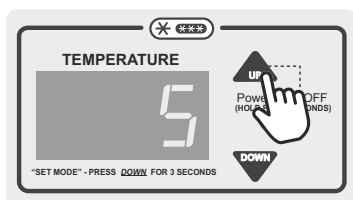
Setting the desired temperature



The compartment temperature can be adjusted by entering the SET mode on the respective compartment :

Hold the DOWN button until the display begins to flash.

The procedure is the same for both controls on Dual-compartment models.

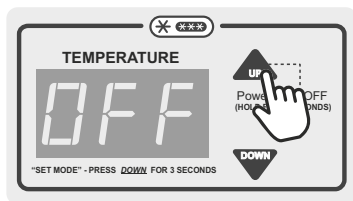


When the display is flashing, press UP or DOWN to increase or decrease the compartment temperature.

When the desired value is reached, release all buttons. After 10 seconds, the display will stop flashing and the new setting will take effect.

The display will then return to showing the current temperature.

Disabling a compartment - dual models only



On Dual models, it is possible to independently turn off the left or right compartment.

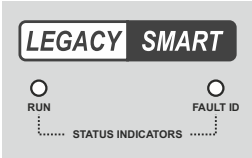
This can be used to reduce power consumption if only one compartment is needed.

To turn off a compartment, enter the settings mode.

Increase the temperature setting until "OFF" is displayed. Release the buttons.

To re-activate the compartment, enter set mode and set any desired temperature.

RUN indicator



The RUN status indicator will show when the fridge compressor is running. Dual compartment models will have two RUN indicators which will show which compartment is being cooled.

- OFF - The compartment is not cooling.
- ON - The compressor is running and the compartment is being cooled.

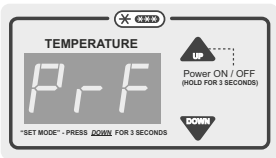
Flashing (1/2 second on, 1/2 second off) -
Start delay before compressor runs.

Flashing (1 second on, 1 second off) -
Compressor is slowing down before stopping.

Fault diagnostics

There are several parameters being monitored by the fridge during operation. If a fault is detected, it will be identified by flashing the Fault-ID indicator between 1 and 6 times within a 4-second period. The number of flashes will indicate which fault has been detected.

1 flash	Low voltage - The DC supply voltage is lower than the chosen battery protection level. Check the battery and all wiring from the battery. This can also occur with an AC power supply fault.
2 flash	Fan over-current - This can occur if the ventilation fan is blocked or damaged. Check the fan intake for signs of excess dust or debris. This can also occur if the fan has failed.
3 flash	Motor start error - The compressor is unable to start. This can occur in extreme environments with high temperatures and heavy loads. This error can be temporary and may clear automatically.
4 flash	Minimum speed error - The compressor is unable to maintain a minimum speed. This can be an electronics failure or over-pressurised system.
5 flash	Over-temperature - The electronic driver is too hot and has shut down. This can occur if the ventilation intake is blocked or the fan is damaged.
6 flash	Driver failure - The electronic driver has suffered a failure. This may be permanent damage and may require replacement.



In addition to the 6 flash codes, if a fault is detected on the internal temperature sensors, a "PrF" message is displayed. This indicates a "Probe Failure" and that the sensor may need to be replaced.

Dual models have two sensors. A "PrF" message may be displayed on either the left or right display - this will show which of the two sensors is problematic.

NL CONNECT Mobile application



Legacy SMART fridges include Bluetooth® wireless technology that allows the status and settings to be monitored by a connected mobile device.

The NL CONNECT application allows the user to observe the fridge status, adjust settings and be notified of fault conditions.

The NL CONNECT application is available for iOS and Android devices and can be downloaded from the respective APP stores.

Scan the QR code below or type the web address into your mobile device to access download links.



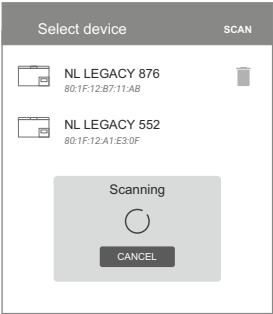
www.nationalluna.com/nlconnect



NL CONNECT requires that Bluetooth® and location services are enabled on the mobile device.

Supports : iOS version 13 or later
 Android version 6 or later

Scanning and connecting to devices



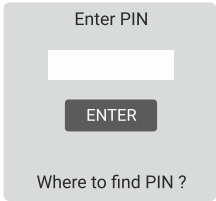
When opening the CONNECT APP, a scan for nearby devices will start automatically.

A scan can also be started manually by tapping SCAN.

Nearby compatible devices will be listed with their default names. If a custom name was set for a previously-connected device, this name will be displayed instead.

The scan process must complete or be cancelled before connecting to a device.

Tap a listed device to establish a connection with it.



When connecting with a new device, a prompt to enter the PIN will be displayed.

Enter the fridge serial number as displayed on the back of the fridge and then press ENTER.

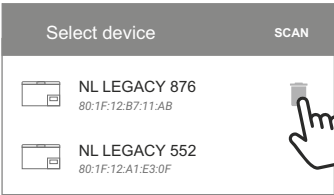
** see page 35 for details about where to locate the serial number.*

If the PIN is correct, a connection to the fridge will be established.



If a device has been previously connected, it will be remembered and entering a PIN will not be required.

Removing remembered devices



Previously-connected devices will be remembered by the APP and listed with a trash icon in the scan list.

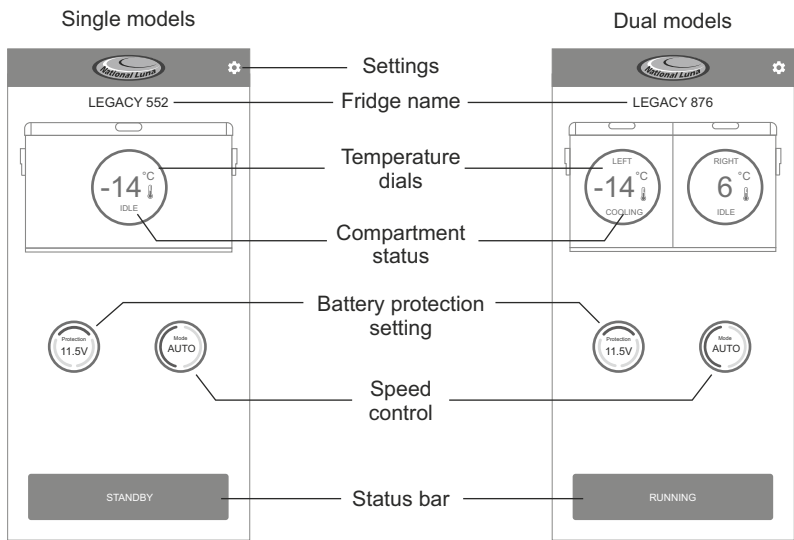
In order to forget a device, tap the trash icon and then OK on the confirmation prompt.

This will forget the device PIN and any custom name that may have been set for it.

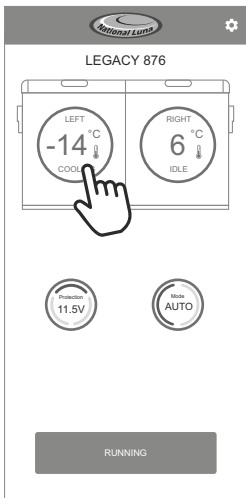


CONNECT Dashboards

When a connection is established, a dashboard relevant to the connected device will be shown. This dashboard will show the device name, temperatures, setting options and the current status.



Setting desired temperatures



Temperature dials will show the current temperature and whether the compartment is cooling or idle.

To adjust a temperature setting, tap on the respective temperature dial. The current setting is displayed.

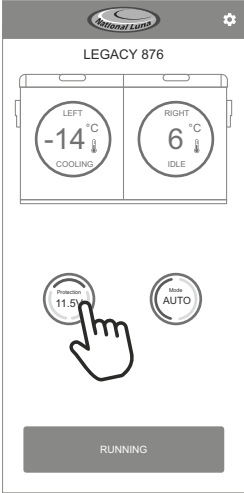


The status bar will now show controls to increase or decrease the setting. Press + to increase temperature. Press - to decrease temperature.



Press OK to complete the setting.

Change battery protection level



To adjust the battery protection level, press the PROTECTION dial. Each press will cycle between the available options.



11.5V (High) - This is best when the fridge is powered by a vehicle main battery and the least discharge level is preferred.



10.5V (Med) - Best for most applications where the fridge is powered by a deep-cycle auxiliary battery.

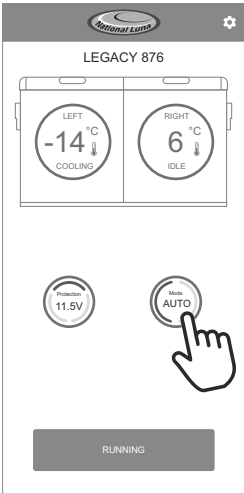


9.5V (Low) - This can be used if priority is to have longer run time at the expense of deep battery discharge. It can also be used to temporarily compensate for some installation faults.



A LOW battery protection setting may result in excessive battery discharge.

Changing speed mode



The speed control will toggle between the AUTO mode, where the fridge will automatically balance cooling performance, and TURBO mode where maximum cooling performance is desired at the expense of increased power consumption.



AUTO - Best for most applications. The fridge will manage compressor speed automatically.

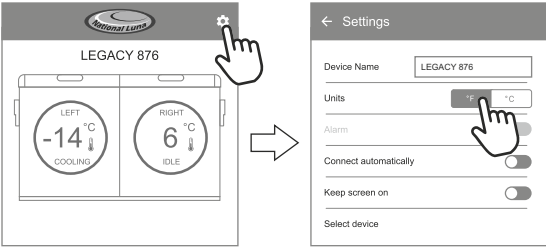


TURBO - Over-ride the speed control and run at maximum speed. This increases cooling performance.



TURBO mode can increase power consumption.

Changing temperature units (°C / °F)



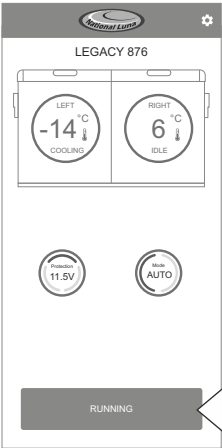
To toggle between °C and °F, first access the settings page by pressing the gear icon.

On the settings page, select the preferred temperature units.

There may be a short delay for the fridge display to update.

Press back to return to the dashboard.

Status and Fault indication



The status bar shows the current fridge status at any moment. It will indicate if the fridge is running, is idle or in a startup delay.

Any detected faults will also be indicated on the Status bar.



The fridge has reached temperature and is idle.



The fridge is preparing to start the compressor and cool a compartment.



The compressor is running and a compartment is being cooled.

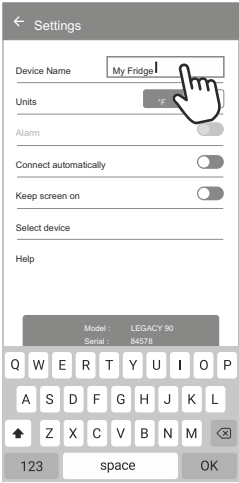


The compressor is slowing down before stopping.



A fault has been detected. Press the up arrow for more information about the fault.

Setting a custom name (nickname)



A custom name can be set for a connected fridge. This name is saved in the APP memory and is linked to the fridge unique hardware number.

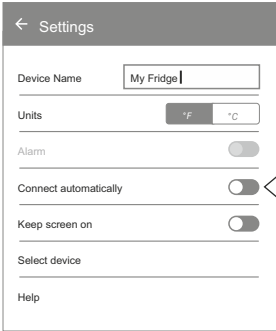
The configured name will be displayed on the dashboard and in the scan list when scanning for nearby devices.

To set a custom name, go to the settings page.

Tap the text block with the current device name.
A keyboard will appear and you can type a new name.

Press OK or Enter when done.

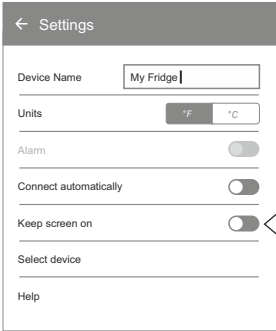
Connect automatically option



If this option is set, when the APP is opened, it will attempt to connect automatically to the last-connected device if it is within range.

You will not need to select the device from the scan list.

Keep screen on option



This option will prevent the screen of the mobile device from turning off while the APP is open.

Note - this will increase battery use on the mobile device.

Defrosting

It is normal for ice to accumulate on the cooling surfaces of a freezer. This will be more significant in humid environments. Increased ice build-up will reduce cooling performance and should be removed periodically.

Before defrosting, remove any contents of the fridge or freezer compartments.

Disconnect all power cables from the fridge and open the main door.

Allow any ice or frost to melt.

Use a soft cloth to remove melting ice and water.

Do not use sharp objects to scrape ice from the cooling surfaces.

It is best to dry the interior before turning on the fridge.

Care and cleaning

Use a soft cloth with mild detergent if necessary to clean the exterior of your fridge.

Make sure surfaces are dry before storage.

The interior should be cleaned regularly to prevent bacteria and odours from forming.

Use a soft cloth with mild detergent or anti-bacterial soap, do not use abrasive or strong chemicals.

Do not use ammonia-based cleaning agents or strong acids.

Do not use sharp tools to remove ice on the cooling surfaces.

The ventilation intake on the rear of the fridge may accumulate dust or debris over time. Check the vents regularly and blow out any dust, remove any loose debris.



A blocked air intake can result in poor cooling performance and increased power consumption.

Storage when not in use

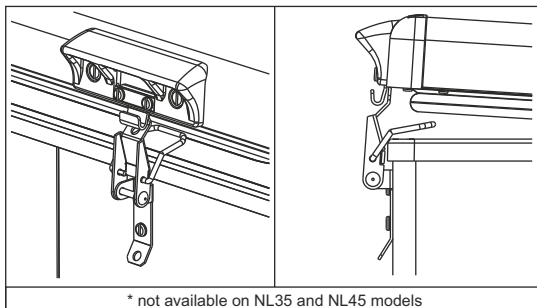
When your fridge is not in use, it is best to clean the interior and exterior prior to storage.

Turn off the fridge and remove power cables.

It is recommended to keep the door open to allow air to circulate inside the fridge.

This will help keep the interior dry and prevent odours.

A door latch can be used to keep a door open as indicated below *

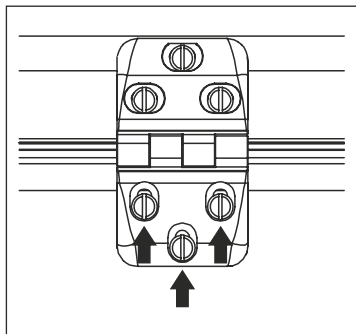


TIP - Place baking soda in an open container and position inside the fridge. This will help to absorb odours.

Adjusting door tension

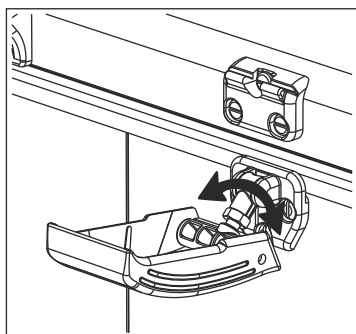
Over time, the door seal may compress or deform.

This is normal and it may be necessary to adjust the door tension.



Adjustable door hinges

1. Unclip the door latches.
2. Loosen the 3 lower screws on each door hinge.
3. Apply light, even pressure on the back edge of the door.
The door seal should be lightly compressed.
4. Tighten the 3 screws on each hinge.
5. Close the door latches and check their tension.
They should not be loose or overly tight.



Adjustable door latches - NL35 and NL45 only

The door latches on the NL35 and NL45 models can be adjusted to increase or decrease door tension on the opening edge of the fridge.

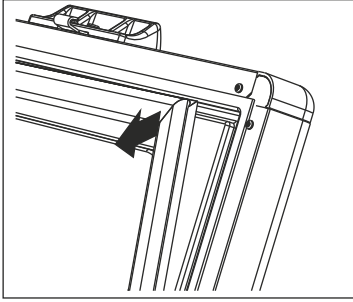
To adjust tension :

1. Unclip and fully open the door latch.
2. Tighten the brass nut to increase tension or loosen the nut to decrease tension.
3. Make small changes, checking the tension between each adjustment. The latch should operate easily with light force. Do not over-tighten.



Take care not to over-tension the door catches or hinges as this can over-compress the door seal or damage the door catch components.

Removing door seal



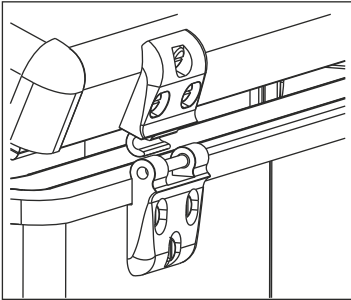
The door seal can be removed for cleaning simply by pulling from one corner. Clean and dry the seal and replace by pushing it firmly into the recessed slot in the lid.

Over time the door seal may become less flexible and not seal completely. Remove the seal and place in a warm environment, such as in the sun.

This can help the seal to return to its original shape.

If the seal is damaged, replace with a new one.
(spare part available)

Removable hinges - *optional accessory*



Applications with limited space where it is not possible to fully open the main door can benefit from removable hinges.

These replace the standard hinges and allow the door to be completely removed after opening partially.

Remove each of the standard hinges and replace with a removable hinge. Adjust the door tension if necessary.

Recommended temperature settings

Fruits, vegetables, dairy products, unfrozen meats.	3°C to 6°C	37°F to 43°F
Cold beverages	0°C to 5°C	32°F to 41°F
Short-term frozen meats	-6°C to -10°C	21°F to 14°F
Frozen meats & fish	-10°C to -12°C	14°F to 10°F
Ice-cream and frozen deserts	-18°C	0°F

Optimising efficiency

Follow these simple tips to reduce your fridge's energy consumption :

- Keep your fridge in a cool, well-ventilated area.
- Set the internal temperatures appropriate for the contents. Setting temperatures colder than necessary can increase energy consumption.
- Avoid opening the main door more than necessary.
- Load pre-frozen foods into the freezer or freeze the contents when AC power is available.
- Turn off an unused compartment on a Dual-compartment model to reduce energy use.
- Dual-compartment models often have one compartment with thicker insulation and seperate lid. Use this as the freezer if a fridge + freezer combination is used.
- With Dual-compartment models, defrost frozen foods by moving them from the freezer to the fridge compartment. This will help to keep the fridge contents cool and also prevent bacterial growth.
Note - This will increase the defrost time so careful planning is required.

Solar panel, battery and inverter sizing

For most remote applications where solar is the primary energy source, a solar panel size of 100-150W is recommended if 6-8 hours of direct sunlight is available each day. This should be combined with a battery of at least 100Ah and solar regulator suitable for the solar panel used.

A larger battery capacity will allow the fridge to run longer between re-charges and can extend battery life by reducing the chance of deep discharge.

If the fridge is powered by an AC inverter or generator, it should have a rating of 150W or more. The inverter or generator output must be within the fridge AC voltage limits. Large voltage surges can cause permanent damage to your fridge.

Note - It is more efficient to power a fridge directly from a battery than to use an inverter.



Troubleshooting

In the event of unusual or undesired operation, consult the table below of common fault conditions and potential solutions.

Problem	Possible Cause	Solution
Fridge will not run when connected to a vehicle or 12V source. Fridge will only run when battery protection is set to LOW. Fault-ID light is flashing once every 4 seconds.	The DC supply may be interrupted or below the minimum operating voltage. The DC input fuse may be blown. There is a loose connection or the supply wiring is too thin. The supply wiring may have too many connections or is improperly installed.	Recharge the battery if it is low. Check fuses and connectors in the application wiring. Check the DC input fuse on the fridge. Replace if necessary. The supply wiring may be of the incorrect gauge, replace with the recommended size.
Fridge will not run when connected to an AC supply.	The AC supply voltage may be below the minimum AC voltage rating for the fridge. The AC plug or cable may be loose or damaged. The fridge power supply module may be damaged.	Ensure AC supply voltage is within operating specification. Inspect the AC cable. Replace it if it is damaged. Refer the fridge for service.
The fan is noisy or not running at all. Fault-ID light is flashing twice every 4 seconds.	The ventilation fan may be obstructed by debris or excessive dust. The fan may have a broken blade. The fan may be defective.	Clear any dust or debris around the fan and ventilation vents. Refer the fridge for service if the fan is broken or not moving.
Fault-ID light is flashing three or four times every 4 seconds. Compressor is starting and stopping intermittently.	The compressor is unable to start correctly. This can occur if the refrigerant pressure is too high. The compressor or drive electronics are faulty.	This problem can resolve without intervention after a short period. If fault does not resolve, refer the fridge for service.
Fault-ID light is flashing five times every 4 seconds.	The compressor drive electronics have over-heated. This can be a result of blocked ventilation, damaged cooling fan or very high ambient temperature.	Ensure the ventilation vents are clear. Check the cooling fan for obstructions or excess dust.
Fault-ID light is flashing six times every 4 seconds.	Compressor drive electronics failure.	Refer the fridge for service.



Specifications

Power Supply	
AC supply voltage	100V - 240V 50/60Hz
DC supply voltage	9.6V - 32V
Running power	40W - 75W (no USB loads connected)
DC input fuse	15A blade (ATO type)
USB charge (each port)	24W max : 5V, 9V, 12V
Other	
Refrigerant type	R134a
Insulation	CFC / HFC free PU
Climate class	T (tropical)
Operating environment	-5°C to +43°C
Communications	
Type	Bluetooth® 5.0
Radio frequencies	2.402 to 2.480 GHz
Safety standards	SANS 60335-1:2018 Ed 3.1 SANS 60335-2-24:2021 Ed 5.2 IEC 60335-1:2016 Ed 5.1 IEC 60335-2-24:2017 Ed 7.2 EN 301 489-1 V2.2.3 EN 301 489-17 V3.2.4 EN 55014-1 / CISPR 14.1 EN 55014-2 / CISPR 14.2

Minimum temperature settings

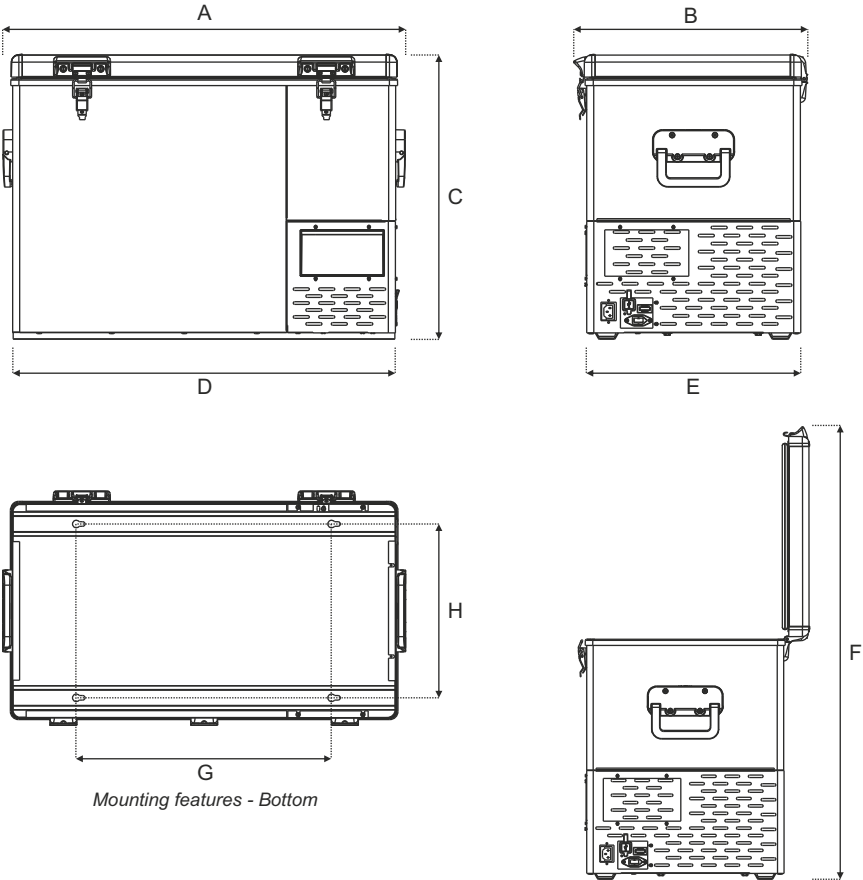
MODEL	LEFT	RIGHT / SINGLE
NL35, NL40, NL45, NL52, NL55, NL65, NL80, NL125	-	-30°C (-22°F)
NL50	-18°C (0°F)	-24°C (-11°F)
NL60, NL70, NL90	-24°C (-11°F)	-18°C (0°F)
NL72, NL110	-24°C (-11°F)	-24°C (-11°F)



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* While every effort is made to ensure documentation is correct, specifications may change without prior notice.

Specifications - cont.



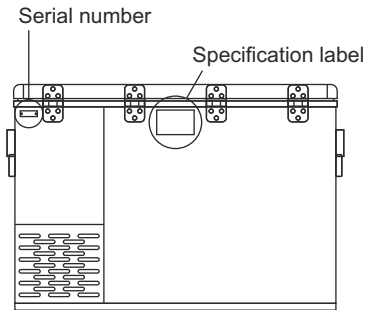
MODEL	A	B	C	D	E	F	G	H
NL35	670	392	430	634	350	765	390	282
NL40	635	420	515	600	398	890	371	315
NL45	670	392	480	634	350	815	390	282
NL50, NL52	710	385	506	675	360	845	436	284
NL55, NL60	750	425	535	718	400	913	476	324
NL65	635	420	715	600	398	1090	371	315
NL70	835	495	475	800	468	920	571	385
NL72, NL80, NL90	835	495	525	800	468	980	571	385
NL110	835	495	706	800	468	1151	571	385
NL125	835	495	735	800	468	1195	571	385

* Dimensions are in mm

** Dimensions are shown for models with the default door configuration.

*** While every effort is made to ensure documentation is correct, specifications may change without prior notice.

Serial number and specification label



A unique serial number is located on the rear of the appliance. Take note of this number when contacting technical support or making a warranty claim.

Do not remove the serial number plate.

This number is also used as the PIN when using the NL CONNECT application on a mobile device.

Punched hole denotes model

NL MODEL	35	40	45	50	52	55	60	65	70	72	80	90	110	125
RT34a Refrigerant	45g	45g	45g	45g	45g	40g	55g	45g	45g	55g	45g	55g	55g	65g

Ver12





Insulation Blowing Gas :
Solkane 1233zd

NATIONAL LUNA OFF-ROAD COMPRESSOR		CLIMATE CLASS	T
DC VOLTAGE RANGE	12V - 24V	5A - 3A	
AC VOLTAGE RANGE	100V - 240V 50Hz	1.1A	

SANS 60335-1:2018 Ed 3.1
SANS 60335-2-24:2021 Ed 5.2
IEC 60335-1:2016 Ed 5.1
IEC 60335-2-24:2017 Ed 7.2

EN 301 489-1 V2.2.3
EN 301 489-17 V3.2.4
EN 55014-1 / CISPR 14.1
EN 55014-2 / CISPR 14.2

Manufactured in South Africa

www.nationalluna.com

A specification label located on the rear panel will indicate the operating voltages and current rating.

Before connecting your fridge to a power source, make sure the voltage is within the indicated AC or DC voltage ranges.

A punched hole in the top row will indicate the specific model. Take note of this model when contacting technical support.

Air transport

This product complies with Special Provision A26 of the Dangerous Goods Regulations (DGR) listed by International Air Transport Association (IATA) and International Civil Aviation Organization (ICAO) and is exempt from declaration as dangerous air cargo based on the following :

This product contains a maximum of 70 grams of non-flammable, non-toxic refrigerant gas. This is less than the 12kg limit allowed for safe air transport.



At the end of this products' life, do not dispose with normal household waste. This appliance should be disposed of responsibly by delivering to an appropriate recycling or waste-disposal facility.



Issue 4 : March 2023

