



Travel Box



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 the appliance near explosive or flammable gasses or materials.
- Do not operate or store the appliance 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 a qualified technician.
- Ensure electrical supply meets the input specifications listed on the appliance.
- The appliance can be connected to 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.
- The appliance is only to be used with the power supply provided.
- 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.
- Do not use any mechanical devices or other actions to accelerate the defrosting process.
- Do not use electrical devices inside the food storage compartments of the appliance.
- To maximise energy saving, please make sure the fridge lid is closed securely and only opened when needed.

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.

Safety information - continued

When used in a mobile application:

- 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 (see page 5).

Travel Box Range Operation:

- These fridges have been specifically designed to operate up to a 35° angle in mobile applications.
- If the refrigerator has been turned upside down or transported beyond this angle, it is advisable to place the fridge in a horizontal position for 24 hours before starting up the fridge.
- (The compressor operates in a lubricating oil which may find its way into the filter drier and cause a blockage in the pipes if the fridge was operated beyond the 35° angle or inverted).

Introduction

Thank you for purchasing a National Luna Travel Box refrigerator.

This product is part of a high-efficiency and high-quality Travel Box range, that has a compact design suited to mobile applications or remote installations such as off-road vehicles, caravans and trailers.

For compatibility with space-constrained applications, all models offer a reversable lid that can be re-configured to open in the opposite direction. The NL20 has moulded carry handles which makes it ideal for space-constrained applications.

Every model can be powered directly from a 12V or 24V battery.

Standard features include: Reversable lid, low voltage protection, battery protection cut-out, lower power consumption, self-diagnostic fault indicator, a protection jacket and an external AC power supply.

The NL20 specifically offers an input voltage indicator, while the NL35, NL45 and NL60 have a MAX and ECO mode function as well as interior lights and foldable carry handles.

In addition, the NL45 and NL60 are fitted with wheels and an extendable handle for ease of transport. These two models further offer the ability to switch between a single and dual compartment fridge with the use of a removable divider.

Models covered in this manual:

Single Compartment:

- NL20: Pages 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 31, 32 & 33
- NL35: Pages 5, 6, 7, 8, 9, 11, 18, 19, 20, 21, 22, 23, 31, 32 & 33

Dual Compartment:

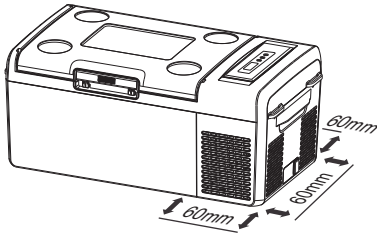
- NL45 & NL60: Pages 5, 7, 8, 9, 10, 11, 24, 25, 26, 27, 28, 29, 30, 31, 32 & 33

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 openings 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 be provided with cool air intake and warm air exhausts.

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 resulting in high voltage loss.

For long-term reliable operation in a motor vehicle or other mobile applications, it is recommended to install dedicated 4mm² (12AWG) wiring between the accessory socket and the power source (battery).

In cases where the distance is above 4 meters, one should use a 6mm² (10AWG) cable. For safety, a 15A fuse should be installed close to the battery on the positive cable.

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.



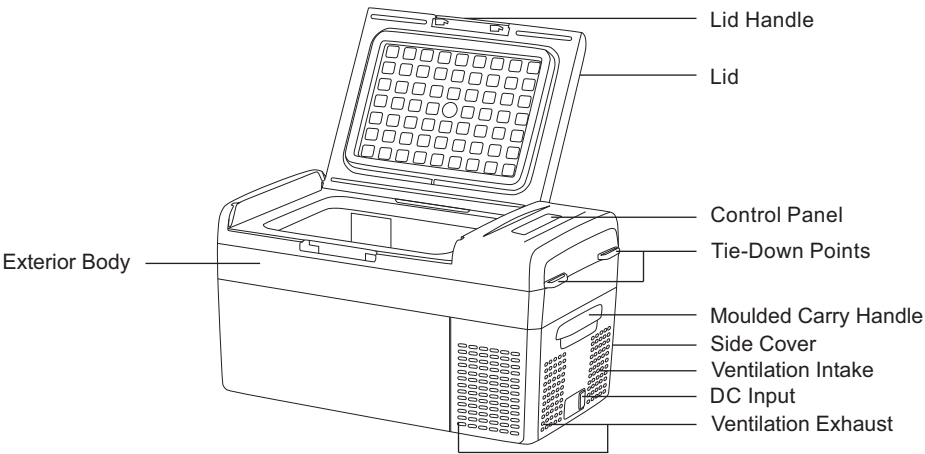
If dedicated wiring is installed to supply the fridge, a 15A fuse should be fitted on the positive cable near to the battery.



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

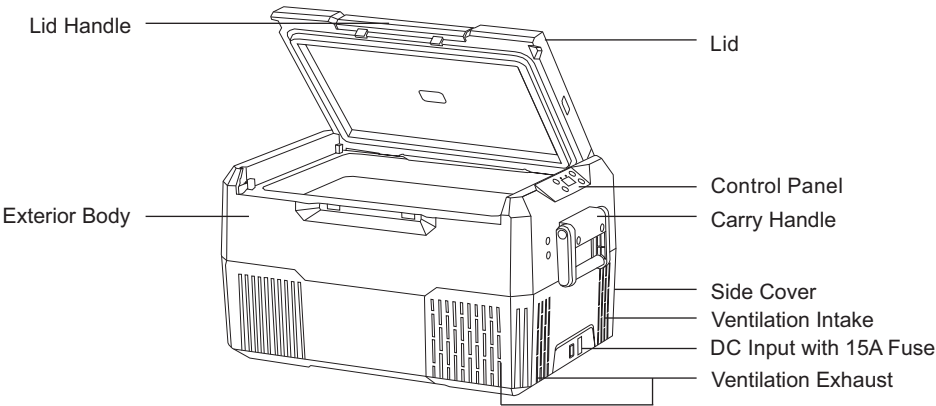
External Features - NL20 Travel Box

Single Compartment



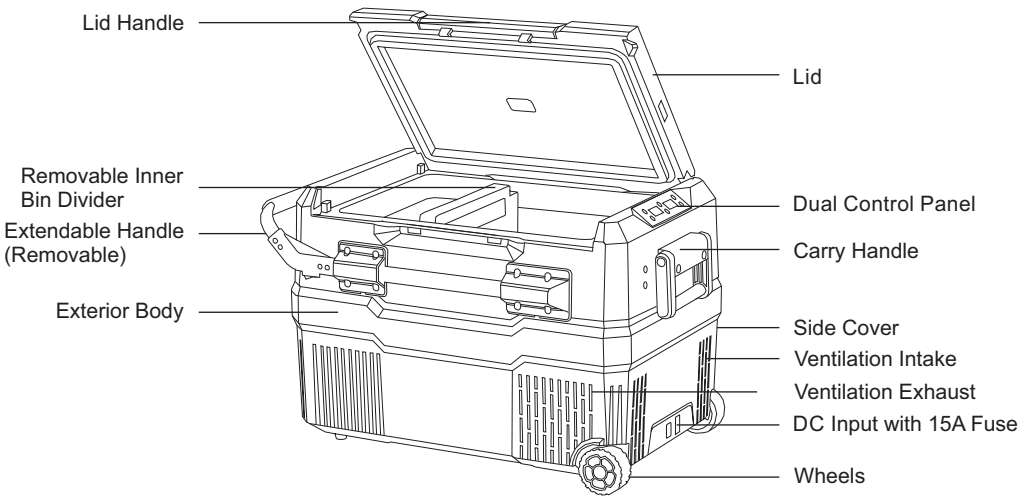
External Features - NL35 Travel Box

Single Compartment



External Features - NL45 & NL60 Travel Box

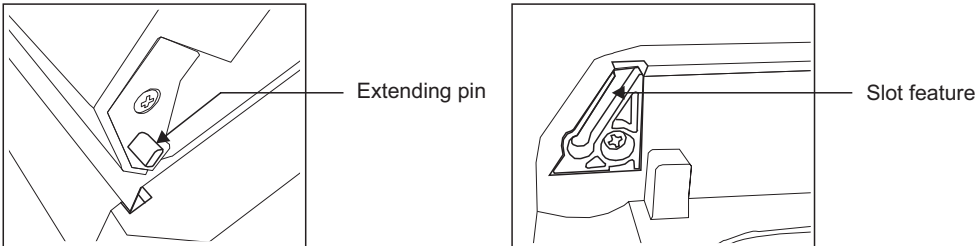
Single and Dual Compartment with Wheels and Extendable Handle



Reversible lid

This product range has a reversible lid feature, which allows the lid to be removed and attached to the opposite side. This can be useful for applications with limited access.

To facilitate the lid change, the lids of all models have a pin extending at the bottom on each side of the lid as well as a slot feature encased within the body of the fridge on both sides. This slot feature allows the lid to be opened and closed repeatedly, without the lid accidentally being removed.



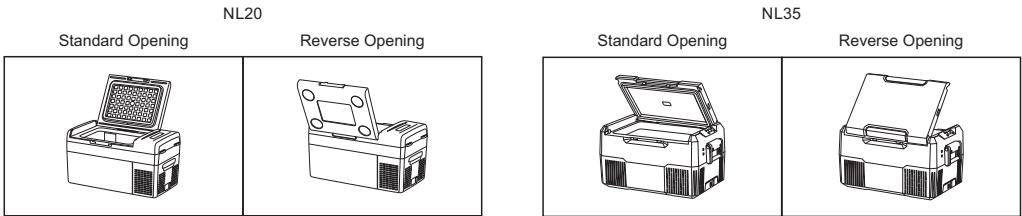
To re-configure the lid, the lid needs to be positioned at a specific angle (the extending pin needs to align with the angle of the slot feature). Once the pin and the slot feature align, the lid can be pulled upward at the same angle to remove it.

To fit the lid, the pin and slot feature once again need to be aligned. Once the angles are aligned, push the lid downward at the same angle until the pin is securely fitted and the lid can be opened and closed.

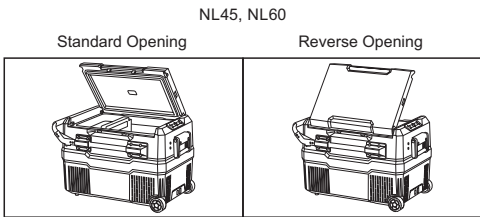
Reversible lid - continued

The lid configurations for each model can be seen below.

Single Compartment:

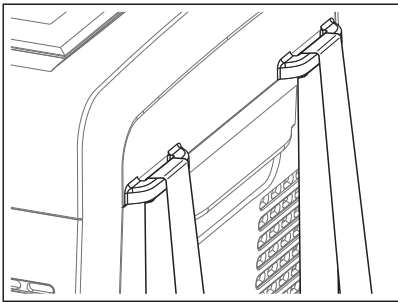


Dual Compartment:



Securing fridge during a mobile application

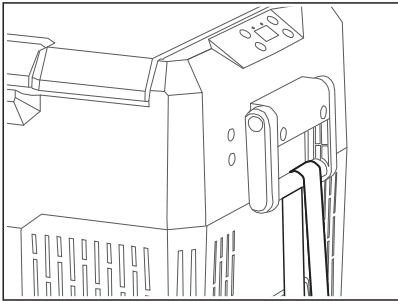
NL20 Travel Box Tie-Down Points



Both sides of the fridge feature tie-down slots that can be used with standard 25mm straps.

Take care not to over-tighten the straps, as this can damage the tie-down slot or the fridge body.

NL35, NL45 and NL60 Travel Box Carry Handles



The foldable carry handles located on the sides of the fridge can be used with standard 25mm straps.

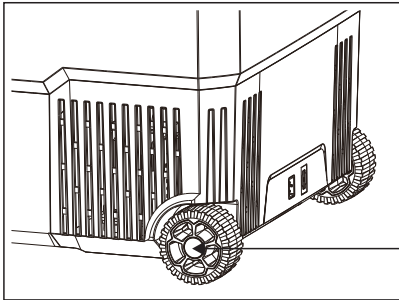
To secure the fridge, the straps need to be placed around the handle grip and fastened.

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

Mobility features

For ease of transport the NL45 and NL60 are fitted with two rear wheels and an extendable handle. Depending on your application, these features can be removed if they are not required.

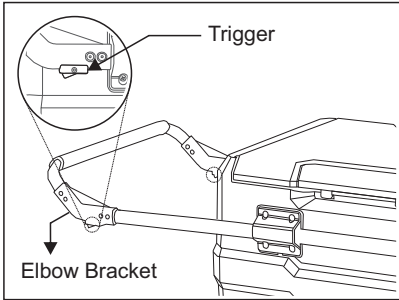
Rear wheels



The wheels are located on the compressor side. When removing the side cover, the wheels need to be removed as well.

Removable Cap

Extendable handle (removable)



This feature is used in conjunction with the wheels and allows for a more ergonomic position and height when transporting the fridge.

To extend the telescopic handle, press the trigger located on both elbow brackets and pull the handle all the way out.

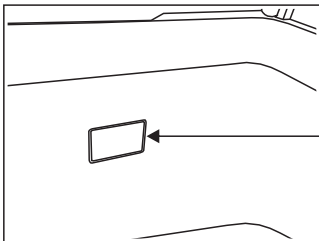
To return the telescopic handle, press the trigger located on both elbow brackets again and push the handle back into its previous position.

The telescopic handle can easily be removed if it is not required for your application. The fridge can then be transported using both of the carry handles.

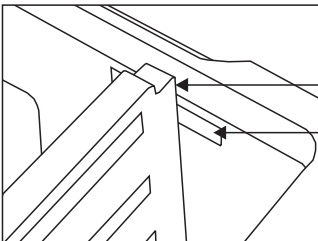
Internal Features - Interior Light

Only the NL35, NL45 and NL60 are fitted with interior lights on the front wall of the interior compartment.

As the NL45 and NL60 models can be converted to a Single or Dual Control fridge, the interior light is positioned to suit both configurations. When using these fridges as a Dual Control fridge, the removable divider is positioned within the interior compartment to cover a portion of the interior light, thereby dividing the light between the two compartments.



Interior Light



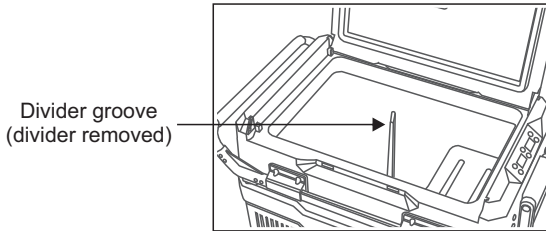
Removable
Divider
Interior Light

Internal Features - Removable Inner Bin Divider

This feature is only applicable to the NL45 and NL60 Dual Control models. With the use of a removable divider, the refrigerator can be changed from a Single Compartment to a Dual Compartment fridge with independent temperature control.

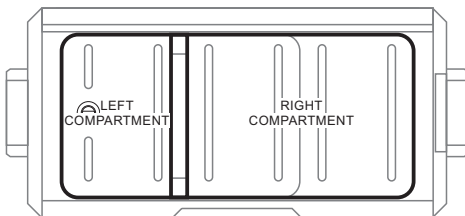
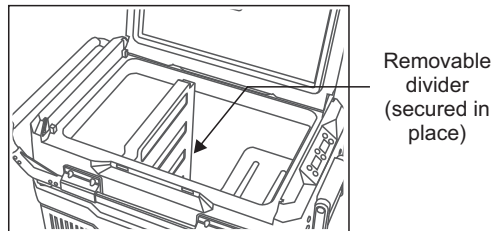
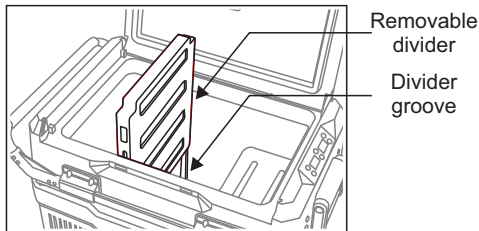
Single Compartment

When the divider is removed, the fridge will automatically switch to a Single Compartment setting, resulting in only the right-hand display being active.



Dual Compartment

In order to switch to a Dual Compartment, slide the divider onto the corresponding grooves within the interior compartment and push down until the divider is against the bottom of the compartment. The fridge will automatically switch to the Dual Compartment settings. This allows the fridge to be set as a combination of fridge and freezer, as twin fridges or as twin freezers at different temperatures.



Additional top view of the fridge

The fridge will start cooling down the right compartment first.



Thereafter the valve will switch to start cooling the left compartment.

The fridge will then alternate the cooling between the two compartments until both temperature settings are reached.



When removing the divider, the fridge will automatically revert to the previous Single Compartment temperature setting on the right-hand display.

Similarly, when the divider is replaced, the unit will automatically revert to the previous Dual Compartment temperature settings.

Connecting Power for 12V / 24Vdc and 240Vac Operation

All models can be powered directly from a 12V or 24V battery. Additionally, an external AC power supply is provided with the fridge.

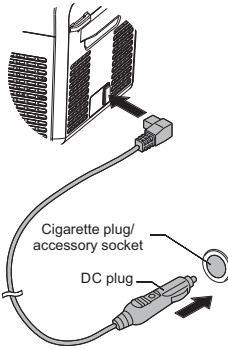
Connecting Power - 12V / 24Vdc Operation

For battery-powered applications, connect the supplied 1.5mm² (16AWG) DC cable (or approved replacement) into the DC input socket and ensure it is properly inserted.

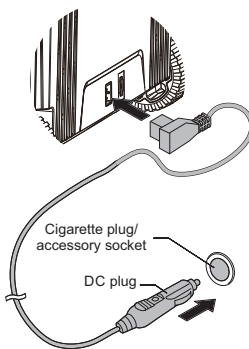
Connect the other end to a 12V / 24Vdc power source.

If connecting to an existing cigarette plug, ensure that the power / voltage supply is sufficient. Additionally, when the DC supply is connected, ensure that when the ignition is turned off, that the power is disconnected as well.

NL20



NL35, NL45, NL60



Connect to a lighter plug that has been connected to the ignition, as direct connection to the main battery may deplete the main battery. As a result the vehicle won't start.



When connecting directly to the battery, it is recommended to set the fridge's Battery Protection setting to high. Using a lower Battery Protection setting may result in permanent damage to the battery.



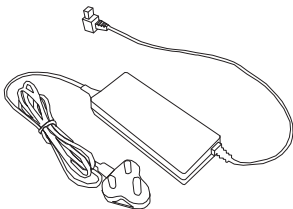
Ensure polarity is correct before connecting the DC supply. Incorrect polarity may result in permanent damage.

Connecting Power - 240Vac Operation

All models are supplied with an external AC power supply that allows the Travel Box to operate from 100 - 240Vac input.

For AC power sources, connect the supplied AC cable to the input socket and ensure it is properly fitted.

Connect the other end to the AC supply.



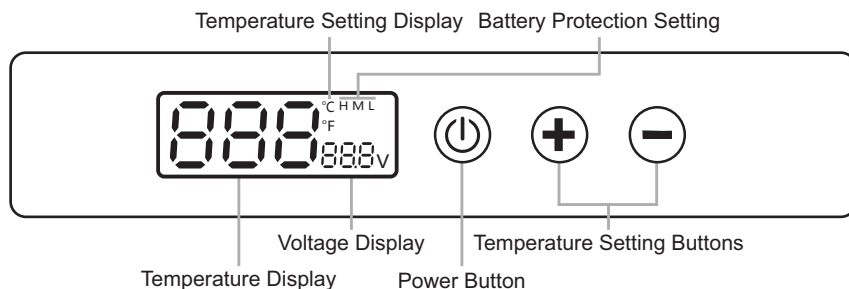
Please note:

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

User Interface - NL20 Travel Box

This control panel provides Temperature Display and Battery Protection settings as well as a Voltage indicator.

Display and button layout



Powering on the fridge

When the fridge is connected to a power source, press the “⏻” button to power the fridge on or off.



When there is a power interruption, the fridge will automatically revert to its previous power state.

If the fridge's display was switched off prior to being disconnected, when the fridge is re-connected to a power source, the display will remain off until the “⏻” button is pressed to power on the display.

Adjusting the temperature

While the fridge is powered on, press “+” to increase and “-” to decrease the fridge's temperature. The temperature range that the fridge can be set to, is between -20°C (lowest) and +20°C (highest).

Note: The lower the temperature setting, the more power is consumed.



Note: To fast scroll through the temperature range, hold down “+” or “-” respectively.



Adjusting battery protection setting

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.

HIGH is recommended when powering the fridge direct 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.

Battery Protection Levels						
Protection Level Power Source	HIGH		MED (Factory Default)		LOW	
Display	---		---		---	
	Start-Up	Cut-Off	Start-Up	Cut-Off	Start-Up	Cut-Off
12V	12.4V	11.1V	11.7V	10.4V	10.9V	9.6V
24V	25.7V	24.3V	24.2V	22.8V	22.7V	21.3V

In order to select one of the Battery Protection levels, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the “⏻” button to power off the fridge’s display.



Once the display is powered off, hold “+” and “-” down simultaneously for 3 seconds.



Please note: If these buttons are pressed while the unit is powered on, F1, F2 or F3 will be displayed. This indicates a specific manufacturing setting for the fridge and should be ignored (the fridge will default back to its original setting after 5 seconds).

The display will reflect PR (Protection Settings). Press “+” or “-” to enter the battery protection setting mode.



Adjusting battery protection setting continued

Once the setting mode is entered, the current battery protection level will be displayed. See page 13 for the battery protection setting guide.

Press “” to increase the battery protection mode from Low to Medium or High

Low battery protection level



Medium battery protection level



Press “” to lower the battery protection mode from High to Medium or Low.

High battery protection level



After the preferred battery protection level has been selected, allow a 5 second delay in order for the new setting to be saved.

Switching between Celsius (°C) and Fahrenheit (°F) display

In order to switch between the temperature display modes, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the “” button to power off the fridge's display.



Switching between Celsius (°C) and Fahrenheit (°F) display continued

Once the display is powered off, hold “+” and “-” down simultaneously for 3 seconds.



Please note: If these buttons are pressed while the unit is powered on, F1, F2 or F3 will be displayed. This indicates a specific manufacturing setting for the fridge and should be ignored (the fridge will default back to its original setting after 5 seconds).

The display will reflect PR. Press the “⏻” button to cycle to the temperature display setting.



The current temperature display mode will be displayed. Press “+” or “-” to change the temperature display mode from °C to °F or vice versa.

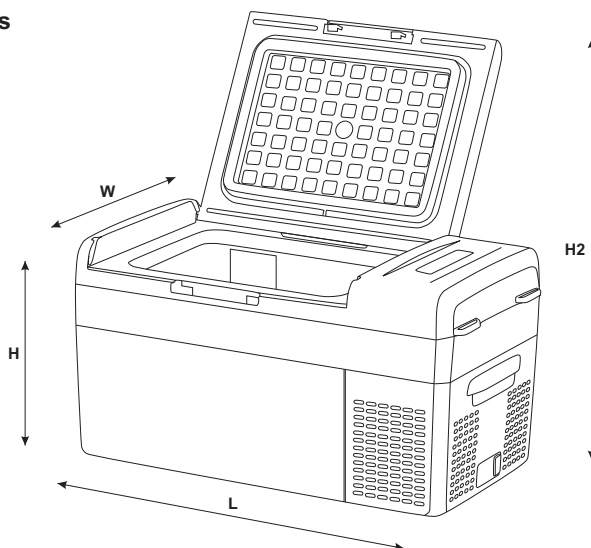


After the preferred temperature display mode has been selected, allow a 5 second delay in order for the new setting to be saved.

Specifications - NL20 Travel Box

Fridge:	
Capacity	20L
Weight	10.9Kg
Temperature range	-20°C to +20°C (-4°F to 68°F)
DC power supply:	
DC supply voltage	12V / 24V
Rated power	55W
Rated current	5.8A / 2.9A
External AC power supply:	
AC supply voltage	100 - 240V 50/60Hz
Other:	
Refrigerant type	R134a
Insulation	C-Pentane
Climate Class	SN/N/ST/T
Operating environment	32°C (90°F)

Product Dimensions



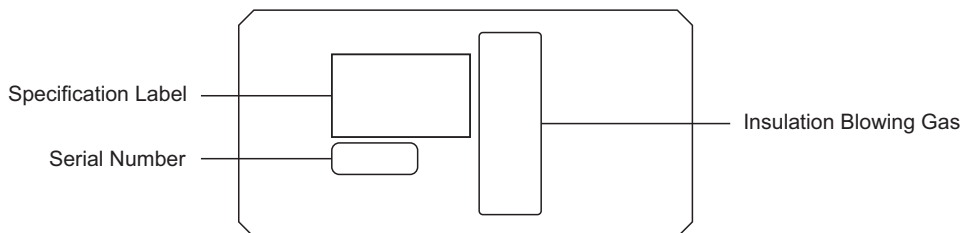
Model	Length (L) in mm	Width (W) in mm	Height (H) in mm	Open Height (H2) in mm
NL20	615	332	330	612

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

Serial Number and Specification Label - NL20 Travel Box

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

Do not remove the serial number sticker.



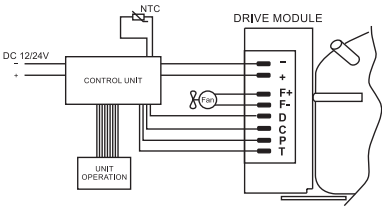
A specification label located on the bottom panel of the fridge, will indicate the fridge's operating voltages and current rating.

Before connecting your fridge to a power source, make sure the voltage is within the indicated voltage range.



Model: NL20

Compartment Type	Refrigerator	 
Climate Class	SN/N/ST/T	
Appliance Class	III	
Rated Voltage DC	12V/24V 	
Rated Current DC	5.8A/2.9A	
Refrigerant Type	R134a (28g)	
Co ₂ Equivalent	0.040t	
Insulation Blowing Gas	C-Pentane	



IEC 60335-1:2010

IEC 60335-1:2010/AMD1:2013

IEC 60335-1:2010/AMD2:2016

IEC 60335-2-24:2010

IEC 60335-2-24:2010/AMD1:2012

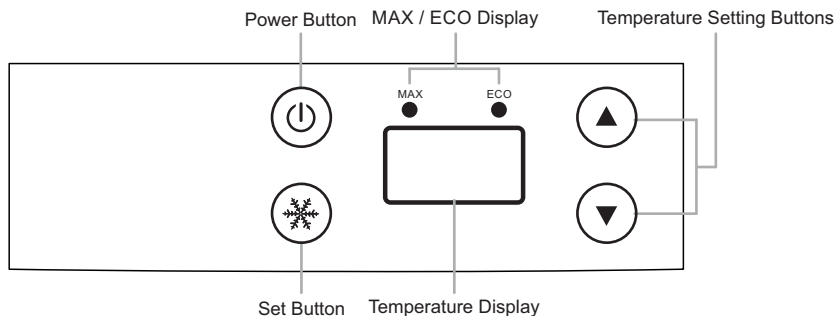
IEC 60335-2-24:2010/AMD2:2017

SN. _____
www.nationalluna.com
Made in China

User Interface - NL35 Travel Box

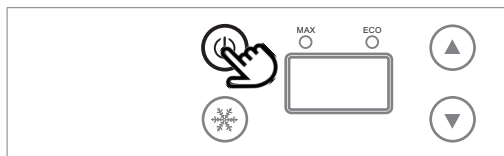
This control panel provides Temperature Display and Battery Protection settings as well as a MAX and ECO mode function.

Display and button layout



Powering on the fridge

When the fridge is connected to a power source, press the “⏻” button to power the fridge on or off.



When there is a power interruption, the fridge will automatically revert to its previous power state.

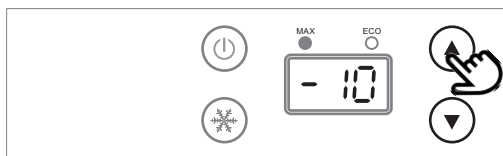
If the fridge's display was switched off prior to being disconnected, when the fridge is re-connected to a power source, the display will flash “888” once and remain off until the “⏻” button is pressed to power on the display.

Note: The interior light will always operate when the fridge is connected to a power source, even when the display is powered off.

Adjusting the temperature

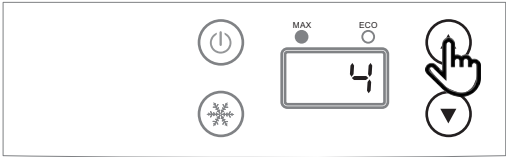
While the fridge is powered on, press “▲” to increase and “▼” to decrease the fridge's temperature. The temperature range that the fridge can be set to, is between -18°C (lowest) and $+10^{\circ}\text{C}$ (highest).

Note: The lower the temperature setting, the more power is consumed.



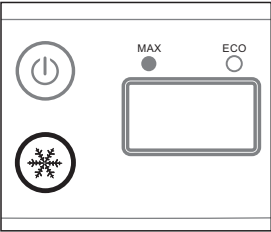
Adjusting the temperature continued

Note: To fast scroll through the temperature range, hold down “▲” or “▼” respectively.



Switching between MAX and ECO mode

The fridge has two cooling modes. Based on your preferred application, the fridge can be set to either of these modes.



MAX mode will increase the cooling performance of the fridge, but at the expense of increased energy consumption.

ECO mode will lower the cooling performance of the fridge in order to lower the overall energy consumption.

While the fridge is powering up, press the “* ” button to switch between MAX and ECO mode.

Adjusting battery protection setting

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.

HIGH is recommended when powering the fridge direct from a vehicle main battery. This provides the highest protection level.

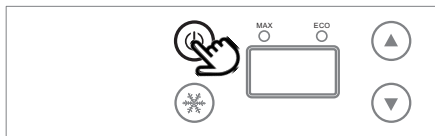
MED is recommended for most applications where a deep-cycle auxiliary battery is used to power the fridge.

LOW can be used to prioritize fridge run-time over battery discharge.

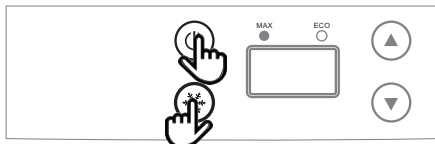
Battery Protection Levels						
Protection Level Power Source	HIGH		MED (Factory Default)		LOW	
Display	---		---		---	
	Start-Up	Cut-Off	Start-Up	Cut-Off	Start-Up	Cut-Off
12V	12.4V	11.1V	11.7V	10.4V	10.9V	9.6V
24V	25.7V	24.3V	24.2V	22.8V	22.7V	21.3V

Adjusting battery protection setting continued

In order to select one of the Battery Protection levels, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the "⏻" button to power off the fridge's display.



Once the display is powered off, hold "⏻" and "❄️" down simultaneously for 3 seconds.



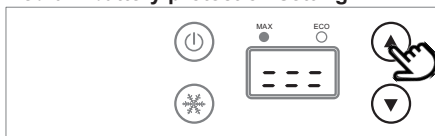
Once the setting mode is entered, the current battery protection level will be displayed. See page 19 for the battery protection setting guide.

Press "▲" to increase the battery protection mode from Low to Medium or High.

Low battery protection setting

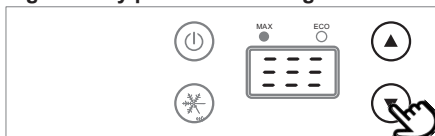


Medium battery protection setting



Press "▼" to lower the battery protection mode from High to Medium or Low.

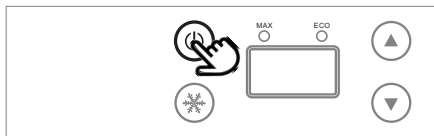
High battery protection setting



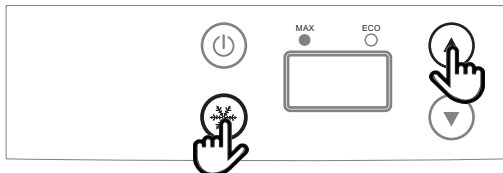
After the preferred battery protection level has been selected, allow a 5 second delay in order for the new setting to be saved.

Switching between Celsius (°C) and Fahrenheit (°F) display

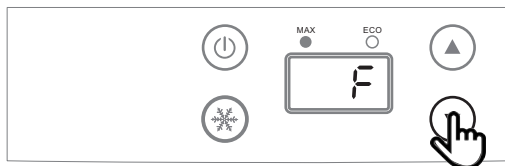
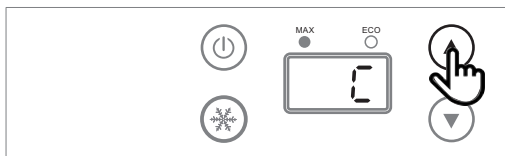
In order to switch between the temperature display modes, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the “” button to power off the fridge’s display.



Once the display is powered off, hold “” and “” down simultaneously for 3 seconds.



The current temperature display mode will be displayed. Press “” or “” to change the temperature display mode from °C to °F or vice versa.

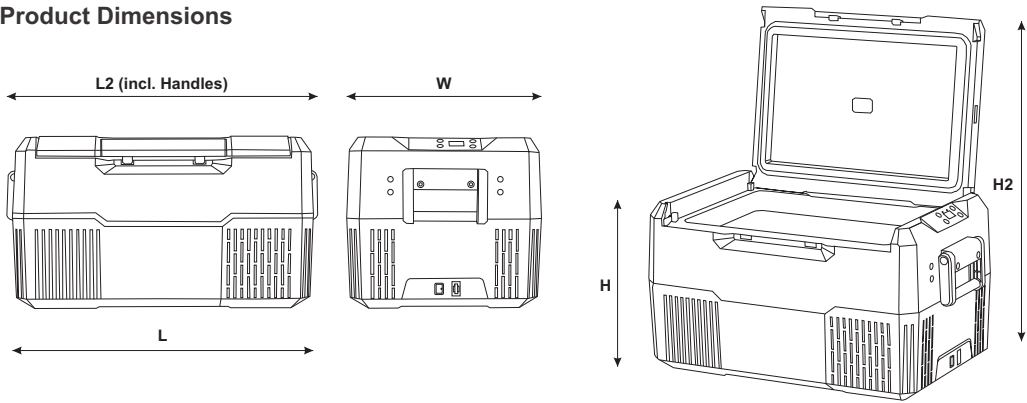


After the preferred temperature display mode has been selected, allow a 5 second delay in order for the new setting to be saved.

Specifications - NL35 Travel Box

Fridge:	
Capacity	31L
Weight	14.5Kg
Temperature range	-18°C to +10°C (0°F to 50°F)
DC power supply:	
DC supply voltage	12V / 24V
DC input fuse	15A
Rated power	60W
Rated current	7.0A / 3.5A
External AC power supply:	
AC supply voltage	100 - 240V 50/60Hz
Other:	
Refrigerant type	R134a
Insulation	C-Pentane
Operating environment	32°C (90°F)

Product Dimensions



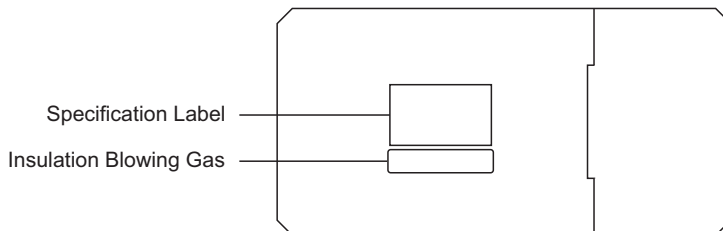
Model	Length (L) in mm	Length (L2) incl. Handles in mm	Width (W) in mm	Height (H) in mm	Open Height (H2) in mm
NL35	630	685	400	365	720

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

Serial Number and Specification Label - NL35 Travel Box

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

Do not remove the serial number sticker.



A specification label located on the bottom panel of the fridge, will indicate the fridge's operating voltages and current rating.

Before connecting your fridge to a power source, make sure the voltage is within the indicated voltage range.

The schematic diagram shows the electrical layout of the fridge. It includes a 'UNIT OPERATION' block connected to a 'CONTROL UNIT'. The 'CONTROL UNIT' is connected to a 'FUSE' (12V/24V DC), an 'NTC' (Negative Temperature Coefficient) thermistor, and a 'Light PCB'. The 'CONTROL UNIT' also controls a 'Fan' and a 'COMPRESSOR UNIT'. The 'COMPRESSOR UNIT' is connected to the refrigerant system, which is represented by a coiled line. The refrigerant system is labeled with 'F+', 'F-', 'D', 'C', 'P', and 'T' terminals.

Model	NL35 Travel Box
Compartment Type	Refrigerator
Protective Classification of electric shock resistance	III
Rated Voltage DC	12V/24V ~~~
Rated Current DC	7.0A/3.5A
Refrigerant Type	R134a (26g)
Insulation Blowing Gas	C-Pentane

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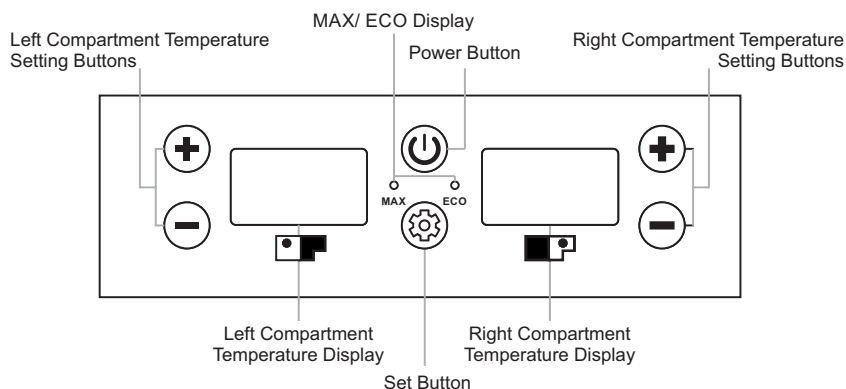
Made in China

Serial No. _____

User Interface - NL45 & NL60 Travel Box

This control panel provides Temperature Display and Battery Protection settings as well as a MAX and ECO mode function.

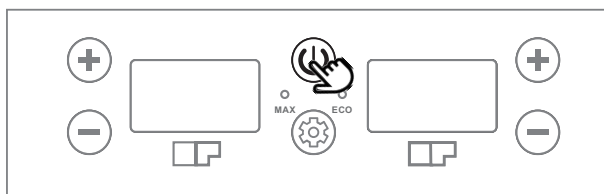
Display and button layout



The Left Compartment refers to the part on the left side of the divider, while the Right Compartment refers to the part on the compressor side.

Powering on the fridge

When the fridge is connected to a power source, press the “⏻” button to power the fridge on or off.



When there is a power interruption, the fridge will automatically revert to its previous power state.

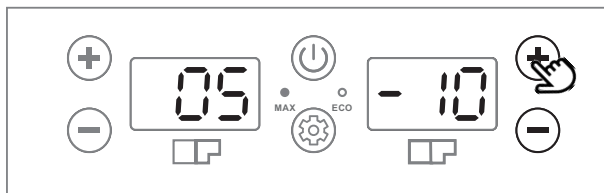
If the fridge's display was switched off prior to being disconnected, when the fridge is re-connected to a power source, the display will flash “888” once and remain off until the “⏻” button is pressed to power on the display.

Note: The interior light will always operate when the fridge is connected to a power source, even when the display is powered off.

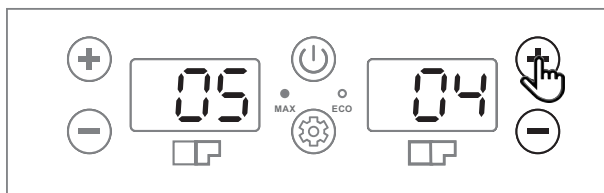
Adjusting the temperature

While the fridge is powered on, press “**+**” to increase and “**-**” to decrease the fridge’s temperature. The temperature range that the fridge can be set to, is between -18°C (lowest) and +10°C (highest).

Note: The lower the temperature setting, the more power is consumed.

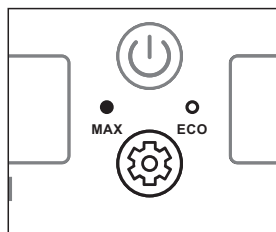


Note: To fast scroll through the temperature range, hold down “**+**” or “**-**” respectively.



Switching between MAX and ECO mode

The fridge has two cooling modes. Based on your preferred application, the fridge can be set to either of these modes.



MAX mode will increase the cooling performance of the fridge, but at the expense of increased energy consumption.

ECO mode will lower the cooling performance of the fridge in order to lower the overall energy consumption.

While the fridge is powering up, press the “*****” button to switch between MAX and ECO mode.

Adjusting battery protection setting

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.

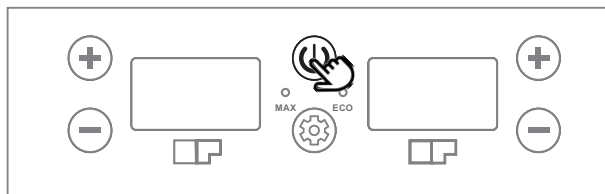
HIGH is recommended when powering the fridge direct from a vehicle main battery. This provides the highest protection level.

MED is recommended for most applications where a deep-cycle auxiliary battery is used to power the fridge.

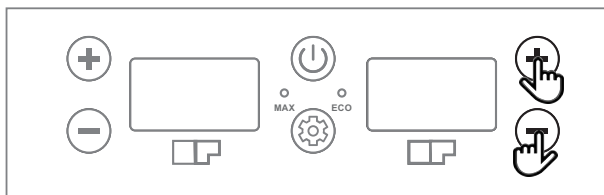
LOW can be used to prioritize fridge run-time over battery discharge.

Battery Protection Levels						
Protection Level Power Source	HIGH		MED (Factory Default)		LOW	
Display	---		---		---	
	Start-Up	Cut-Off	Start-Up	Cut-Off	Start-Up	Cut-Off
12V	12.4V	11.1V	11.7V	10.4V	10.9V	9.6V
24V	25.7V	24.3V	24.2V	22.8V	22.7V	21.3V

In order to select one of the Battery Protection levels, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the “⏻” button to power off the fridge’s display.



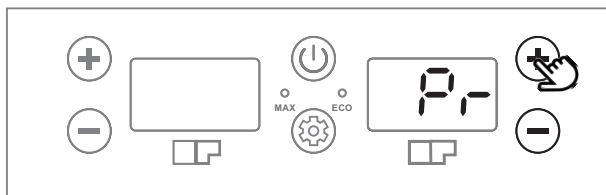
Once the display is powered off, hold “+” and “-” down simultaneously for 3 seconds.



Please note: If these buttons are pressed while the unit is powered on, F1, F2 or F3 will be displayed. This indicates a specific manufacturing setting for the fridge and should be ignored (the fridge will default back to its original setting after 5 seconds).

Adjusting battery protection setting continued

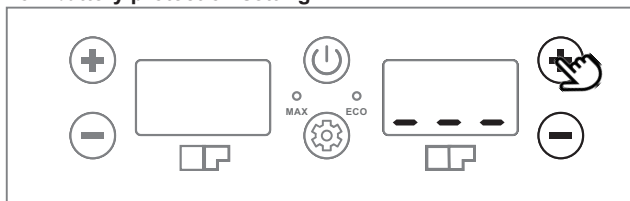
The display will reflect PR (Protection Settings). Press “**+**” or “**-**” to enter the battery protection setting mode.



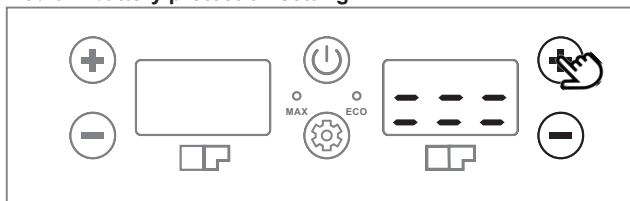
Once the setting mode is entered, the current battery protection level will be displayed. See page 26 for the battery protection setting guide.

Press “**+**” to increase the battery protection mode from Low to Medium or High

Low battery protection setting

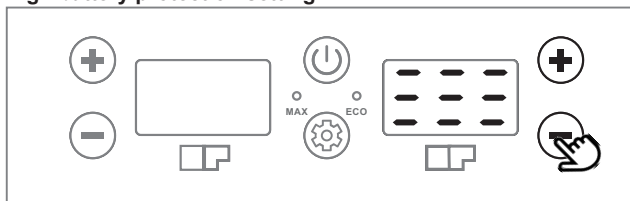


Medium battery protection setting



Press “**-**” to lower the battery protection mode from High to Medium or Low.

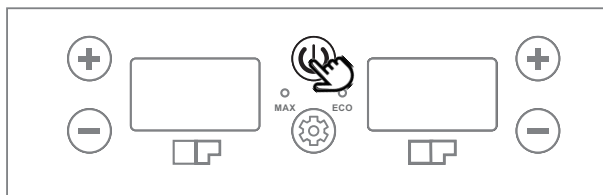
High battery protection setting



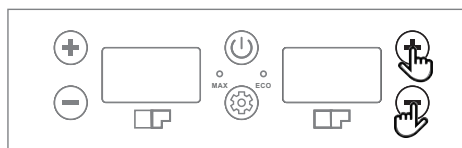
After the preferred battery protection level has been selected, allow a 5 second delay in order for the new setting to be saved.

Switching between Celsius (°C) and Fahrenheit (°F) display

In order to switch between the temperature display modes, the fridge needs to be connected to a power source, but have the display powered off (stand-by mode). Press the “” button to power off the fridge’s display.

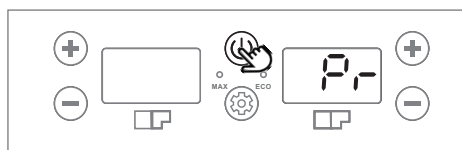


Once the display is powered off, hold “” and “” down simultaneously for 3 seconds.

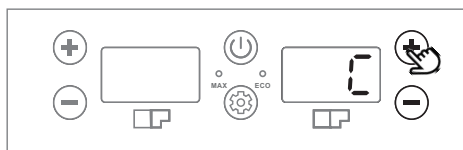
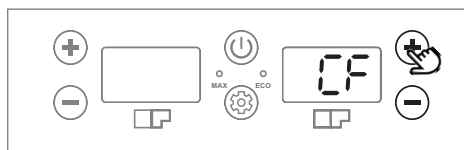


Please note: If these buttons are pressed while the unit is powered on, F1, F2 or F3 will be displayed. This indicates a specific manufacturing setting for the fridge and should be ignored (the fridge will default back to its original setting after 5 seconds).

The display will reflect PR. Press the “” button to cycle to the temperature display setting.



The display will reflect CF. Press “” or “” to change the temperature display mode from °C to °F or vice versa.

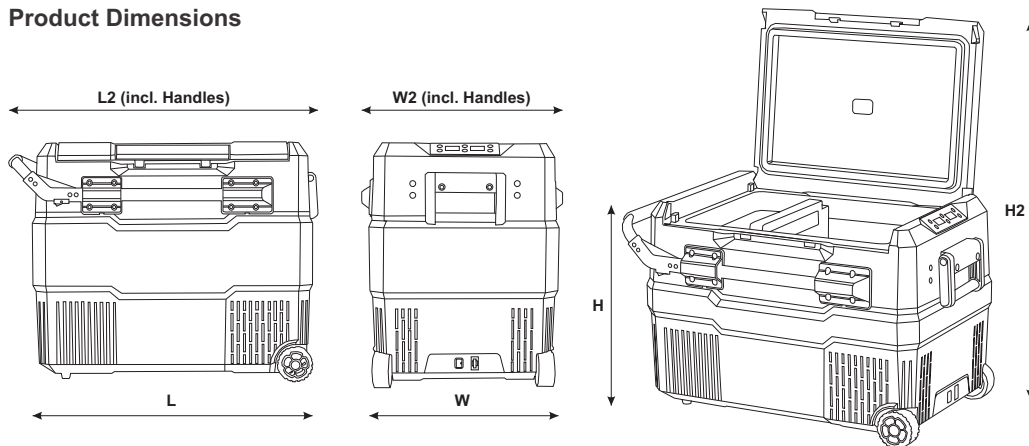


After the preferred temperature display mode has been selected, allow a 5 second delay in order for the new setting to be saved.

Specifications - NL45 & NL60 Travel Box

Fridge:	NL45	NL60
Capacity	43L	56L
Weight	18.5Kg	20Kg
Temperature range	-18°C to +10°C (0°F to 50°F)	
DC power supply:		
DC supply voltage	12V / 24V	
DC input fuse	15A	
Rated power	60W	
Rated current	7.0A / 3.5A	
External AC power supply:		
AC supply voltage	100 - 240V 50/60Hz	
Other:		
Refrigerant type	R134a	
Insulation	C-Pentane	
Operating environment	32°C (90°F)	

Product Dimensions



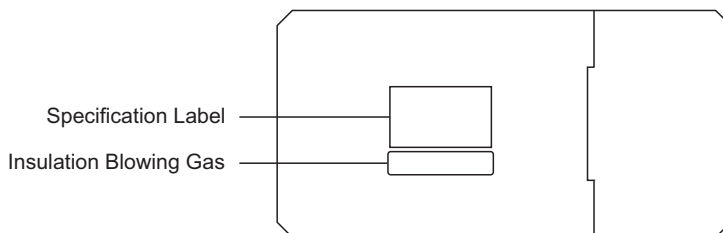
Model	Length (L) in mm	Length (L2) incl. Handles in mm	Width (W) in mm	Width (W2) incl. Handles in mm	Height (H) in mm	Open Height (H2) in mm
NL45	640	720	420	460	450	805
NL60	640	720	420	460	545	905

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

Serial Number and Specification Label - NL45 & NL60 Travel Box

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

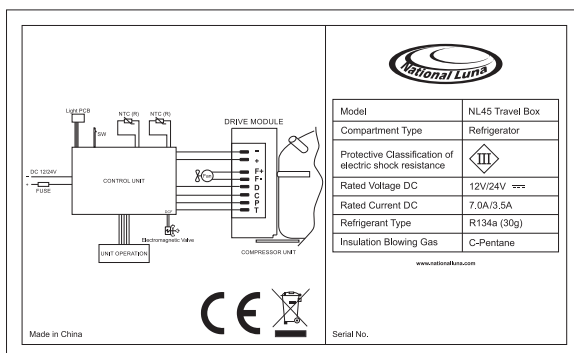
Do not remove the serial number sticker.



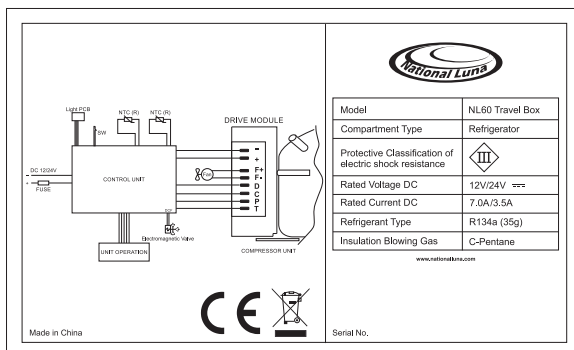
A specification label located on the bottom panel of the fridge, will indicate the fridge's operating voltages and current rating.

Before connecting your fridge to a power source, make sure the voltage is within the indicated voltage range.

NL45 Travel Box



NL60 Travel Box



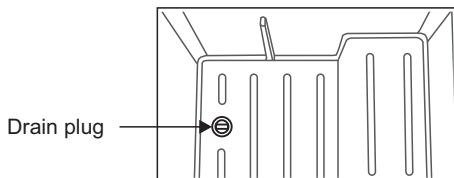
Defrosting

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.

Useful tips:

- 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 to defrost and melt by itself (Do not use sharp objects to scrape ice from the cooling surfaces).
- Use a soft cloth to remove melting ice and water.
- It is best to dry the interior before turning on the fridge.

The **NL35**, **NL45** and **NL60** fridges are fitted with a removable drain plug for convenient cleaning of the interior of the fridge (see diagram below).



Ensure that this plug is securely replaced after defrosting to prevent leaks during operation.

Care and cleaning

Exterior:

- Use a soft cloth with mild detergent if necessary to clean the exterior of your fridge.
- Make sure surfaces are dry before storage (leaving the lid slightly opened to ventilate).
- When storing the fridge, ensure the power is disconnected.

Interior:

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.

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 or 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.

It is recommended to:

- Turn off the fridge and remove any power cables.
- Keep the lid open to allow air to circulate inside the fridge (This will help keep the interior dry and prevent odours).
- For the NL45 and NL60 fridges, store the removable divider within the interior compartment.

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



Setting temperatures below the above recommendations will consume more power, resulting in the fridge running continuously at high ambient temperatures.

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.
- Avoid opening the lid more than necessary.
- Load pre-frozen foods into the freezer or freeze the contents when the external AC power supply is used.
- With Dual Compartment models (NL45 and NL60), defrost frozen foods by moving them from the freezer to the fridge compartment. This will help keep the fridge contents cool and also prevent bacterial growth.

Note: This will increase the defrost time so careful planning is required.

Fault diagnostics

There are several parameters being monitored by the fridge during operation. If a fault is detected, it will be identified by an error code on the display. The error code will indicate which fault has been detected.

Code	Description	Action
E1	Battery voltage is low.	Check battery voltage and adjust the Battery Protection settings as required (see detailed explanation on page 33 the fault table for further clarity on Lead-Acid Batteries).
E2	Fan failure.	Unplug and restart the fridge after 5 minutes. If the error persists, refer the fridge for service.
E3	Compressor start-up error.	
E4	Compressor's running speed fails to reach the requirements.	Check and confirm whether the power supply voltage is stable. If the error persists, refer the fridge for service.
E5	The compressor driver electronics have overheated.	Please check and ensure that the air vents are not blocked and the fan is operational. If the error still persists, refer the fridge for service.
E6	Temperature Probe NTC failure.	The temperature sensor might need to be replaced. Refer the fridge for service.

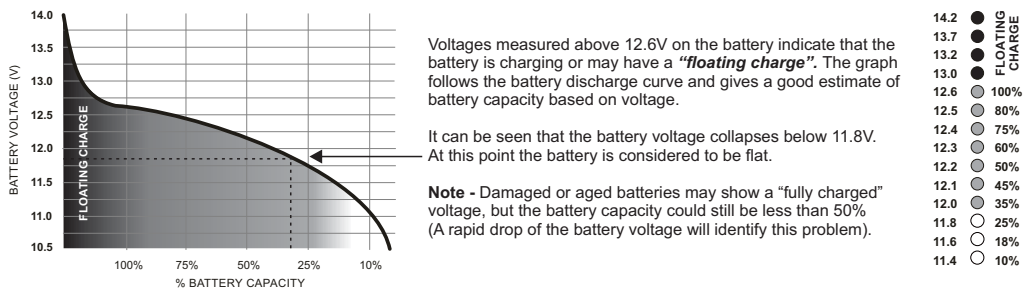
Fault diagnostics continued

The Battery Protection mode may be triggered prematurely on certain vehicles due to thin wiring imperfections, which contribute to a measured DC voltage drop at the compressor on start-up. By lowering the Battery Protection setting, it may resolve this issue. See page 13 (NL20), 19 (NL35), and 26 (NL45 & NL60) for the Battery Protection guide.

Additionally, if error code E1 is displayed while the fridge is operating on 12Vdc, test the fridge on 240Vac using the 240V power supply / adaptor provided. If the fridge functions correctly, this will indicate that the fault is on the 12Vdc power input.

Next, check the Battery Voltage reading at the battery terminals to ensure that the battery is not depleted or discharged too severely. The following graph gives an indication of a typical motor vehicle Lead-Acid battery discharge curve.

Typical voltage-capacity relationship of a lead-acid battery at 25°C



Battery technology is constantly improving. It is advisable to research the manufacturer's battery specifications to see if it is suitable for your application, before purchasing a battery.

Technical data contained in this manual:

Due to ongoing product development and design, some drawings within this manual may differ from the actual product. National Luna reserves the right to change any information contained in this document without prior notice. National Luna will not be held responsible for errors or omissions in this document.



At the end of this product's 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.

Key Information:

Make a note of key information relating to your refrigerator below and keep the booklet in a safe place.

Supplier's Name: _____

Date Purchased: _____

Invoice Number: _____

Model Name: _____

Serial Number: _____



Warranty and Service Information

South Africa

This warranty is only valid within the borders of South Africa
Refer to **International** section for warranty information outside of South Africa

National Luna Limited 3-Year Warranty

National Luna provides a warranty to the original purchaser, that any genuine National Luna product purchased from an authorised reseller will be free from defects in materials and workmanship for a specified length of time from the date of purchase. The warranty period will vary by specific product, as identified in your user documentation or on the product package.

Except where prohibited by applicable local law, this warranty is limited to the original purchaser and is non-transferable.

In general, this warranty means your National Luna product will operate, as specified by its product documentation, and in the operating environment for which it was intended, for the life of the product or the extent of the warranty.

This warranty supercedes all other advertised warranties for this product. No National Luna dealer or other agent is authorised to make any modification, extension or addition to this warranty.

National Luna shall, at its sole discretion, repair or replace any product, provided it is returned to the original place of purchase, or another place as directed by National Luna, with the original sales receipt (or valid copy thereof). You may be required to pay shipping and handling charges, as well as any tariffs, duties, taxes, or other fees, except where prohibited by applicable local law.

National Luna shall not be responsible for any damage or loss that occurs during shipping or via courier to a service centre or repair facility.

National Luna may consider a warranty void if modifications have been made to the product that may affect proper operation.

National Luna shall not be responsible for damage to the product if service or maintenance is undertaken by non-authorised persons.

National Luna will not be responsible for damage or injury as a result of connecting the product to an unsupported power source or voltage outside of the product operating specifications.

National Luna shall not be responsible for damage or injury resulting from negligent use, storage of hazardous chemicals, use of corrosive cleaning materials, fire, flood, civil disturbances, lightning or any other natural phenomenon.

National Luna shall not be responsible for any consequential loss or damage caused by, or due to the malfunction of this product.

National Luna reserves the right to refuse warranty if the original proof of purchase (or valid copy thereof) cannot be produced.

If this product is installed in a motor vehicle, it may require connection to the vehicle electrical system. It is the owners' responsibility to determine if the installation of the product will affect the safe operation of the vehicle or the vehicle warranty. National Luna shall not be responsible if such warranty is rendered void by the motor manufacturer.

Should a product be replaced under warranty, the replacement will carry the balance of the warranty from the original product, unless otherwise stated.

Any products that are not collected within 3-months following service or repair may be sold defray expenses.

Exclusions

This warranty does not cover problems or damage resulting from, but not limited to, any of the following :

1. Wear and tear associated with normal use.
2. Fuses, bulbs, fans or other consumable parts.
3. Any modification, abuse, accident, disassembly, misapplication or un-authorised repair.
4. Removal of any manufacturer labels or stickers.
5. Any improper operation, including any use not in accordance with supplied product instructions.
6. Connection to any improper voltage supply as outlined on the product or in the product documentation.
7. Any other cause which does not relate to a product defect in materials or workmanship.
8. Any 3rd party products included with the returned product (i.e. plugs, chargers, cables, batteries)
9. Where service is performed by an authorised service agent, any costs relating to labour are excluded from this warranty.
10. These fridges are designed for recreational use. The warranty may be voided when the fridge is used in a commercial application where the product is exposed to abnormal / excessive use.

Also excluded from this warranty are counterfeit products. These would be products that National Luna, at its sole discretion, determine were not manufactured by National Luna or any of its authorised manufacturing partners.

Service out of warranty

National Luna provides service and repair to products that are no longer covered by a valid warranty.

Such service or repair may incur costs for assessment or testing in addition to any parts and labour required to perform the repair.

Any service or repair will carry a minimum of 6-month warranty on parts from the date of service unless stated otherwise.

National Luna will continue support for obsolete products for as long as possible but availability of parts for obsolete products cannot be guaranteed and the product may be deemed uneconomical to repair.

How to make a warranty claim

Before submitting a warranty claim, we suggest you contact our technical support or visit www.nationalluna.com and review the support section for technical assistance. You may also submit a request for technical support from the contact form or send an email to the address listed. Please provide the model number and serial number of the product when contacting technical support, making a claim or returning a product for service.

Generally, valid warranty claims should be processed through your original point of purchase.

Please verify the returns policy with the retailer where you purchased your product as additional charges or restrictions may apply. Any warranty claim that cannot be processed through your original point of purchase should be addressed directly to National Luna.

Any products returned to National Luna or authorised service agents should be appropriately protected and packaged with your personal details included.

National Luna reserved the right to perform testing on any returned product to validate a warranty claim.

Assessment fees may apply to products returned for testing, including those that are found to not be defective.

International - (regions outside of South Africa)

National Luna products are distributed worldwide through a distribution network. Authorised importers in a particular country will carry the product service and warranty and may have additional terms and conditions in-line with their conditions of sale.

If National Luna products are sold or imported into a country by persons other than authorised National Luna distributors, no local warranty applies. Products are then required to be returned to National Luna in South Africa where the standard terms of warranty will then apply. The cost of freight, duties, taxes or other costs are for the customers account.

The warranty is valid in the country of purchase - National Luna products that are exported by private individuals shall not carry a warranty in the destination country even if that country has an existing authorised service agent.

National Luna South Africa

www.nationalluna.com

+27 11 452 5438

Warranty terms and conditions may change periodically.

Please check www.nationalluna.com/warranty for the most recent warranty terms.

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