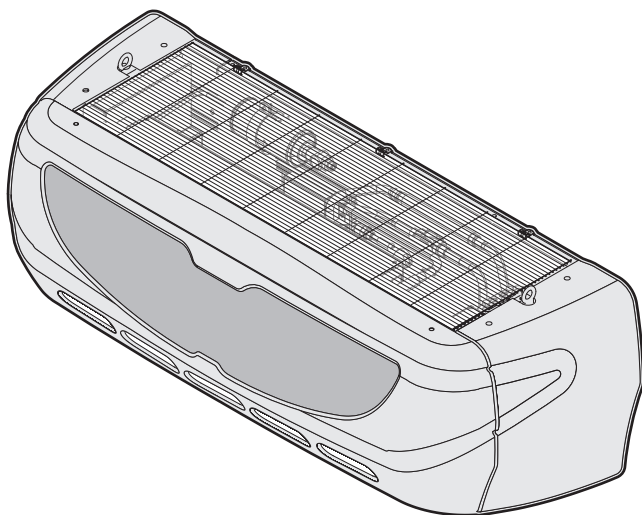


Operation manual

SFZ 268 Light Truck refrigeration unit



SFZ268R750D
SFZ268V750D
SFZ268VV751D
SFZ268RR751D

Operation manual
SFZ 268 Light Truck refrigeration unit

English

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1 About this document

Thank you for purchasing this product.

Target audience

End users

Documentation set

This document is part of a documentation set. The complete set consists of:

- **Leaflet:**
 - Format: Paper (in the box of the unit).
- **Installation manual:**
 - Installation instructions
- **Operation manual:**
 - Operation instructions

The original instructions are written in English. All other languages are translations of the original instructions.

- A printed version of the declaration of conformity is included with the unit.

2 General safety precautions

2.1 About the documentation

- The original instructions are written in English. All other languages are translations of the original.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual must be performed by an authorised installer.

2.1.1 Meaning of warnings and symbols

The action-related warnings are there to warn you against residual risks and precede a dangerous action step.

	DANGER Indicates a situation that results in death or serious injury.
	DANGER: RISK OF ELECTROCUTION Indicates a situation that could result in electrocution.
	DANGER: RISK OF BURNING/SCALDING Indicates a situation that could result in burning/scalding because of extreme hot or cold temperatures.
	DANGER: RISK OF EXPLOSION Indicates a situation that could result in explosion.
	WARNING Indicates a situation that could result in death or serious injury.
	WARNING: FLAMMABLE MATERIAL
	CAUTION Indicates a situation that could result in minor or moderate injury.
	NOTICE Indicates a situation that could result in equipment or property damage.
	INFORMATION Indicates useful tips or additional information.

Symbols used on the unit:

Symbol	Explanation
	Before installation, read the installation and operation manual, and the wiring instruction sheet.
	Before performing maintenance and service tasks, read the service manual.
	For more information, see the installer and user reference guide.

Symbols used in the documentation:

Symbol	Explanation
	Indicates a figure title or a reference to it. Example: "▲ 1–3 Figure title" means "Figure 3 in chapter 1".
	Indicates a table title or a reference to it. Example: "■ 1–3 Table title" means "Table 3 in chapter 1".

2.2 Hazard identification

Risk of poisoning

The unit contains poisonous substances:

- Refrigerant (R452A)
- Compressor oil

In case of ingestion/inhalation/contact, contact the anti-poisoning centre.

Refrigerant R452A

Hazard statements:	
H280	Contains gas under pressure; may explode if heated.
Precautionary statements:	
Prevention:	
P410	Protect from sunlight.
P403	Store in a well-ventilated place.
Further data:	
	Greenhouse fluorinated gas falling within Kyoto Protocol

Compressor oil

Hazard statements:	
H316	Causes mild skin irritation.
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statements:	
Prevention:	
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves.
Response:	
P302	IF ON SKIN: Wash with plenty of soap and water.
P352	
P333	If skin irritation or rash occurs: Get medical advice/ attention.
P313	
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
Disposal:	
P501	Dispose of contents/container to an approved waste disposal plant.

Environmental hazard due to operating materials

- Operating materials can endanger the environment. Leaking fluid should never seep into the ground, because of the risk of contaminating groundwater.
- Always use a suitable collecting recipient when checking for leaks.
- Do not let fluid(s) escape when performing maintenance on the diesel engine.

- Always use a suitable recipient to collect fluids. Keep the recipient ready before opening housings or components containing fluid.
- Dispose of the operating materials according to the country-specific legislations.

Damage caused by wrong operating materials

- Using the wrong operating material can cause loss in performance and damage to the unit. Use only the approved operating materials.

2.3 In case of emergency

WARNING

Stop operation and shut OFF the power in case of an incident.

Leaving the unit running may cause electrical shock, fire or breakage.

INFORMATION

112 is the single European **emergency number**. The European Electronic Communications Code ensures that Europeans can call the European emergency number 112 wherever they are in Europe, free of charge. 112 is also used in some countries outside the EU - such as Switzerland and South Africa - and is available worldwide on GSM mobile networks.

European emergency number 112

- You can **call 112** from fixed and mobile phones to contact any emergency service: an ambulance, the fire brigade or the police.
- Give a brief and objective report of the events and situation.
- A specially trained operator will either deal with the request directly or transfer the call to the most appropriate emergency service depending on the national organisation of emergency services.
- Operators in many countries can answer the calls not only in their national language, but also in English or French. If the caller does not know where he is, the operator will identify where the person making the call is physically located and will pass it to the emergency authorities so that these can help immediately.

Actions to take in the event of an emergency

- Call 112 if the severity of the incident dictates it.
 - Safeguard the incident location.
 - If necessary, provide first aid.
 - In event of eye injury, use an eyewash bottle.
 - Extinguish smaller fires using a fire extinguisher.
- Use an extinguisher with an ABC rating. This is suitable for use with fires involving ordinary combustibles, flammable liquids and energised electrical equipment. An extinguisher that is rated for use with multiple hazards should include a symbol for each hazard type.

2.4 For the user

General

If you are NOT sure how to install or operate the unit, contact your dealer.

WARNING

Before any intervention, make sure that the unit cannot start unexpectedly by disconnecting the battery.

2 General safety precautions



DANGER: RISK OF BURNING/SCALDING

Allow the compressor, the evaporator defrost heaters, and the water discharge heater to cool down before touching any of these parts.



WARNING



Improper installation or attachment of equipment or accessories could result in electrical shock, short-circuit, leaks, fire or other damage to the equipment. ONLY use accessories, optional equipment and spare parts made or approved by Zanotti.



WARNING



When the unit is operating, a magnetic field is generated. This can disturb the functioning of cardiac devices like pacemakers and defibrillators. People who have such devices implanted must stay clear of the working unit when the service doors are opened.



DANGER



Malfunctions can lead to poisoning and explosions. Never put the safety devices out of operation, nor tamper with them so as to impair their function.



WARNING



Avoid contact of skin with corrosive substances. After skin contact, wash immediately with soap and water.



WARNING



The condenser and evaporator have fins that can result in injury by cutting/severing or scalding/frostbite. Do not touch these components without adequate protective equipment.



WARNING



Rotating components, electrical hazards and hot surfaces can cause severe injury or death.

- Only qualified, authorised and trained persons have access to the service compartment.



WARNING



The unit has several cutting parts and sharp edges. Use adequate personal protective equipment when working on or near these parts.



CAUTION



Working on or around the unit raises multiple risks. Use adequate personal protective equipment as indicated when installing, maintaining or servicing the system.



INFORMATION



The sound power level (according to 2000/14/CE) is 88 dBA. It is recommended to wear ear protection when in the vicinity of the working unit.



NOTICE

Excessive vibrations indicate a mechanical defect. This must be reported immediately, and examined by a qualified person.



NOTICE

It is recommended to park the working unit in a shaded area.



NOTICE

Never leave the unit unused for longer than a month.



DANGER: RISK OF ELECTROCUTION

The unit must be switched off when cleaning the unit. Make sure that all power supplies are OFF.



NOTICE



To clean the exterior:

- Do not use any cleaning agents or chemicals.
- Do not use pressurised water.



NOTICE



To clean the interior:

- Even if the main components of the device have a sufficiently high IP rating, do not wash the device and its electrical components and electrical boxes with pressurised water.



INFORMATION

Turn the unit off during loading and unloading of the cold room.



DANGER



Always use a safety harness when working at height.



CAUTION



The top grid of the unit is fragile.

- Do not lean, sit or stand on it.
- Do not place any objects or equipment on it.



CAUTION

Turn on the light before entering the cold room, and take a portable torch with you.

Refrigerant



WARNING



Refrigerant under pressure can escape due to breaks in the cooling system, or during maintenance on the cooling system.



WARNING



Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas might be produced if refrigerant gas comes into contact with fire.



WARNING



- NEVER directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Do NOT touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.

Electrical



DANGER: RISK OF BURNING/SCALDING

Allow the evaporator defrost heaters and the water discharge heater to cool down before touching them.



DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 60 seconds, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.



WARNING



NEVER touch the person receiving an electrical shock, or you could suffer one too. Do NOT touch the person until you are sure power is turned off.

Electrical shocks always need emergency medical attention, even if the person seems to be fine.



WARNING



- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

2.5 Instructions for safe operation



CAUTION

If the vehicle is switched OFF, it is NOT possible to switch the unit ON in road mode.



CAUTION

Make sure that the supply voltage of the main unit corresponds to that indicated on the label (the tolerance is +/-10% for the nominal voltage).



CAUTION

External power supply mode is designed for intermittent, non-intensive use. It is NOT a substitute for a stationary refrigeration system with its own cell as it does NOT have the same technical characteristics.



WARNING



Zanotti is not responsible for cold room safety.

Make sure that no people are left in the cold room before you close the doors.



WARNING

Maintenance can be carried out ONLY by authorised personnel.

3 About the unit and options



CAUTION

Before carrying out any maintenance activities, make sure that the in-cab controller is switched OFF and that the unit cannot start.



CAUTION

Be careful not to damage the fins during the cleaning process.



CAUTION

Make sure that the unit is disconnected from all power supplies before accessing the electrical box.



CAUTION



There are potential environmental hazards involved in dismantling the unit.

3 About the unit and options

3.1 About the system

The SFZ268 refrigeration unit is designed for light trucks that are suitable for transporting perishable goods. It is a split-type unit where the condensing part is installed outside of the load area and the evaporating part is installed inside of it. The system also includes an in-cab controller (HMI) for the management and monitoring of the unit.

The condenser and evaporator(s) are connected by flexible suction and discharge hoses that are attached to the taps during installation.

The refrigeration unit operates on the road using a road compressor driven by the vehicle engine. For certain versions, it can also be powered by an electric compressor connected to an external power supply when the vehicle is on standby.

3.2 About the different models

The SFZ refrigeration unit is available in the following standard configurations:

SFZ268

- condenser
- four-fan evaporator

SFZ268 multi-temperature

- condenser
- two-fan evaporator
- two-fan evaporator

Model	Nominal capacity [kW]			
	Road mode 0°C	External power supply mode 0°C	Road mode -20°C	External power supply mode -20°C
SFZ268R	6.500	-	3.225	-
SFZ268V	6.500	4.640	3.225	1.740
SFZ268VV	6.035	4.430	3.150	2.015
SFZ268RR	6.035	-	3.150	-

3.3 Safety systems

Safety devices

Overload relay:

- protects the system by stopping the compressor,
- opens the electric circuit if it overloads for any reason,
- also sends a signal to the in-cab controller and an alarm is then triggered.

Fuses:

- located in the electrical box of the unit.

Low pressure switch (LPS):

- switches the unit off in case of low pressure in the refrigerant circuit.

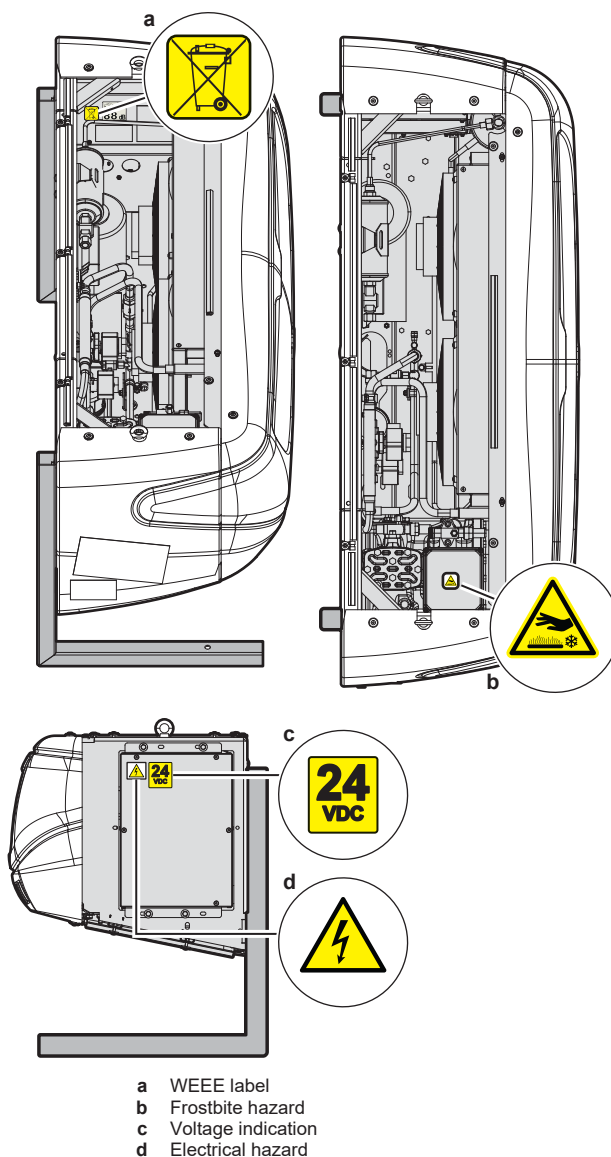
Defrost end thermostats (FTS):

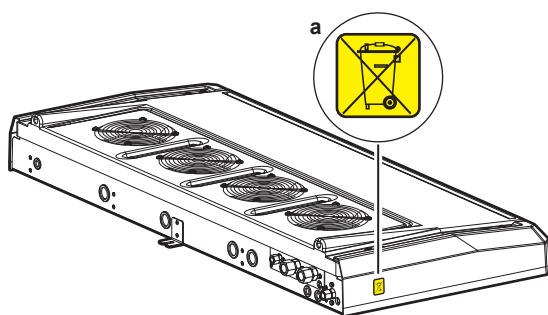
- intervene to interrupt defrosting if the temperature rises above a certain value before the timing has expired.

High pressure switch (HPS):

- switches the unit off in case of excessive pressure in the refrigerant circuit.

3.4 Safety symbols location





a WEEE label

3.5 Possible options for the unit



INFORMATION

Certain options may NOT be available in your country.

Road compressor

For installation, see the installation manual.

Heat with hot gas recovery (single-temperature versions only)

The hot gas recovery technology is based on the same concept as hot gas defrost: the hot gas coming out from the compressor is directly deviated in the evaporator. Additional technical improvements extend the efficiency and duration of the heating.

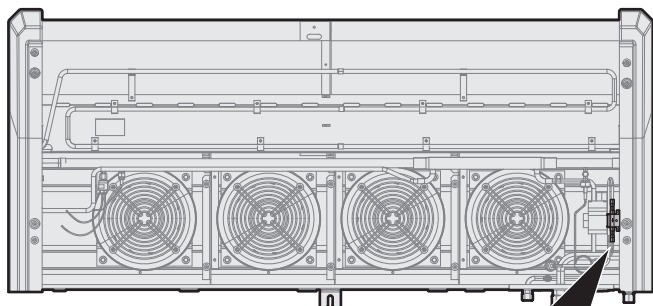
The kit contains the harness, plugs, and connectors.

For installation, see the installation manual.



INFORMATION

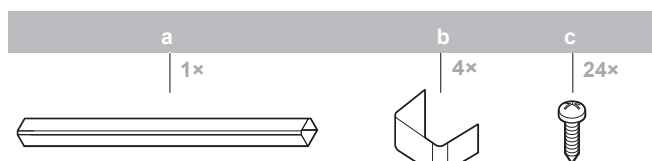
The injection valve is already included in the evaporator.



a

a Injection valve

Harness and hoses canal (2 m)



a Conduit
b Plastic bracket
c Screw

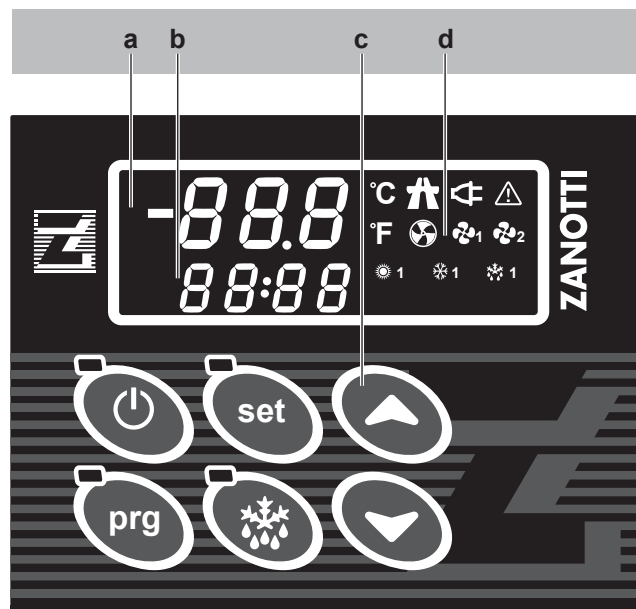
4 User interface

This operation manual offers a non-exhaustive overview of the main functions of the system.

The main control unit (in-cab controller) located inside the vehicle cabin allows the user to manage and monitor the unit.

4.1 Overview

4.1.1 Single-temperature version



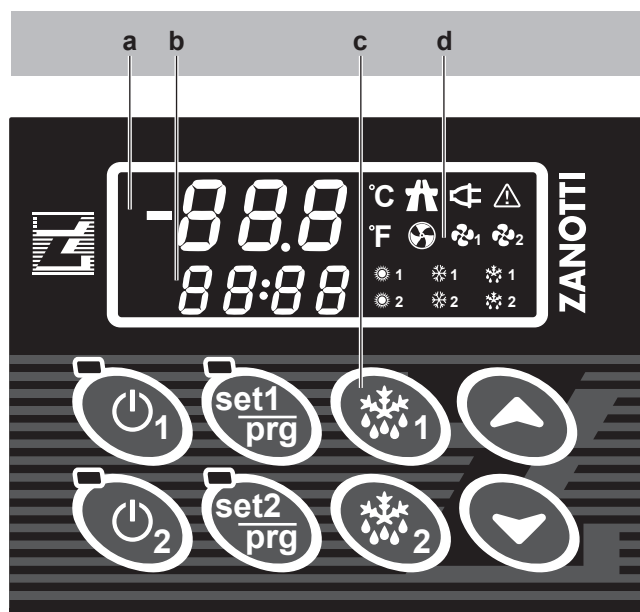
a Temperature display
b Alarm display
c Buttons
d Icons

	Description
	ON/OFF button. Press for 3 seconds to switch the unit ON/OFF. The red LED is ON while the unit is switched OFF and receiving power.
	Set button. Sets the working temperature setpoint. When the LED is ON, the setting mode is enabled.
	Programming button. Press for 5 seconds to access the programming mode. When the LED is ON, the programming mode is enabled.
	Manual defrost button. Press for 5 seconds to start a defrost cycle. When the LED is ON, the defrost cycle is in progress.
	Up/down buttons. Press to set operating parameters and the temperature setpoint.
°C	°C icon. Indicates that the temperature is displayed in °C.
°F	°F icon. Indicates that the temperature is displayed in °F.
	Hot mode icon. Indicates that the hot cycle is in progress.
	Cold mode icon. Indicates that the cold cycle is in progress.
	Defrost mode icon. Indicates that the defrost cycle is in progress.

4 User interface

	Description
	External power supply mode icon. Indicates that the unit is operating in external power supply mode.
	Alarm icon. Lights up when an alarm occurs.
	Road mode icon. Indicates that the unit is operating in road mode.
	Condenser fan icon. Indicates that the condenser fan is in operation.
	Evaporator fan icon. Indicates that the evaporator fan is in operation.
	Temperature display. Displays the cold room temperature.
	Alarm display. Displays the alarms.

4.1.2 Multi-temperature version



- a Temperature display
- b Alarm display
- c Buttons
- d Icons

	Description
	ON/OFF button 1. Press for 3 seconds to switch the compartment 1 evaporator ON/OFF. The red LED is ON while the unit is switched OFF and receiving power.
	Set button 1. Sets the working temperature setpoint of the compartment 1 evaporator. When the LED is ON, the setting mode is enabled.
	ON/OFF button 2. Press for 3 seconds to switch the compartment 2 evaporator ON/OFF. The red LED is ON while the unit is switched OFF and receiving power.
	Set button 2. Sets the working temperature setpoint of the compartment 2 evaporator. When the LED is ON, the setting mode is enabled.
	Manual defrost button. Press for 5 seconds to start a defrost cycle. When the LED is ON, the defrost cycle is in progress. Button 1 is for the compartment 1 evaporator, button 2 is for the compartment 2 evaporator.
	

	Description
	Up/down buttons. Press to set operating parameters and the temperature setpoint.
	°C icon. Indicates that the temperature is displayed in °C.
	°F icon. Indicates that the temperature is displayed in °F.
	Hot mode icon. Indicates that the hot cycle is in progress. Icon 1 is for the compartment 1 evaporator, icon 2 is for the compartment 2 evaporator.
	
	Cold mode icon. Indicates that the cold cycle is in progress. Icon 1 is for the compartment 1 evaporator, icon 2 is for the compartment 2 evaporator.
	
	Defrost mode icon. Indicates that the defrost cycle is in progress. Icon 1 is for the compartment 1 evaporator, icon 2 is for the compartment 2 evaporator.
	
	External power supply mode icon. Indicates that the unit is operating in external power supply mode.
	Alarm icon. Lights up when an alarm occurs.
	Road mode icon. Indicates that the unit is operating in road mode.
	Condenser fan icon. Indicates that the condenser fan is in operation.
	Evaporator fan icon. Indicates that the evaporator fan is in operation. Icon 1 is for the compartment 1 evaporator, icon 2 is for the compartment 2 evaporator.
	
	Temperature display. Displays the cold room temperature.
	Alarm display. Displays the alarms.

4.2 Basic functions



INFORMATION

The following instructions generally apply to both versions of the in-cab controller. The only distinction is the presence of dedicated buttons and icons for each compartment marked by numbers 1 and 2 on the multi-temperature version.

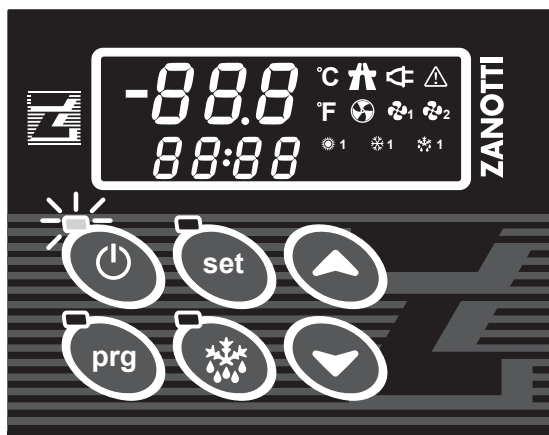
4.2.1 To start up



INFORMATION

Make sure that the red LED of the ON/OFF button is ON.

The LED is ON when the refrigeration unit is switched OFF and it is receiving power from the external power supply or the running vehicle. When the unit is switched ON, the LED will switch OFF.



- 1 Press the ON/OFF button for 3 seconds to switch the unit ON.

Result: The unit starts up. The red LED of the ON/OFF button will switch OFF. The icons of active components will light up during their various operational phases.

Cooling			
Heating			
Defrosting			

Road mode operation

The vehicle automatically enables the road mode, and the road mode icon lights up.



CAUTION

If the vehicle is switched OFF, it is NOT possible to switch the unit ON in road mode.

External power supply mode operation

Connecting the plug to the external power supply automatically enables the external power supply mode, and the external power supply mode icon lights up.



CAUTION

Make sure that the supply voltage of the main unit corresponds to that indicated on the label (the tolerance is +/-10% for the nominal voltage).

4.2.2 To shut down

- 1 To switch the unit OFF:
 - Press the ON/OFF button .
 - **Road mode:** Switch the vehicle OFF with the ignition key. The unit will switch ON again automatically without pressing the ON/OFF button once the vehicle starts again.

Result: The unit shuts off.

4.2.3 To set the temperature

- 1 Press the set button .
- Result:** The current temperature value will start flashing in red, and the **Set** icon will appear.
- 2 Use the up/down buttons / to set the desired temperature setpoint.
 - 3 Press the set button for 10 seconds to save the new setpoint.

Result: The setpoint has changed.

4.2.4 To manually start the defrost mode

The main control unit performs automatic defrosts autonomously (see "5.4 About defrosting" [p 12](#)).

You can also start a defrost manually:

- 1 Press the manual defrost button .

Result: The defrost cycle starts, and the red defrost icon lights up.



INFORMATION

The defrost cycle ends after reaching the maximum time limit, or if it is interrupted by the thermostat positioned on the evaporator fins.



INFORMATION

Starting the manual defrost resets the timer for the start of the next scheduled defrost cycle.

4.3 About the alarms

When a malfunction is detected:

- The alarm icon and the error code appear on the display (instead of the setpoint). This allows the immediate identification of the malfunction.
- The HMI audible alarm is activated.



INFORMATION

Pressing any button on the HMI will switch the audible alarm OFF.

Take into account that:

- Alarms usually appear as long as they are active; in case of an alarm with an automatic reset, the alarm disappears, but it will remain stored and can be displayed in the alarm log.
- Alarms and warnings are identified by error codes. See "4.3.4 Overview of the error codes" [p 10](#).

4.3.1 About the alarm log

The alarm log can store the last 10 alarms and their duration. If an alarm is stored in the log, the alarm icon will be flashing.

4.3.2 To display the stored alarms

- 1 Press the up button for a few seconds to display the most recent alarm.

Result: The upper display shows the error code, the lower display shows the number of interventions occurred.



INFORMATION

If no alarms are stored in the alarm log, the code **noA** will appear.

- 2 Press the up button again to display the error codes of other alarms, from the newest to the oldest.

4 User interface

- 3 Press the set button  to check the alarm duration.
- 4 Press the up button  or set button  again to move to the next alarm.

4.3.3 To reset an alarm

- 1 Enter the alarm log. See "4.3.2 To display the stored alarms" [p. 9] for more information.
- 2 Reset the displayed alarm, or clear the entire alarm log:
 - To reset the displayed alarm, press the set button  for 2 seconds.
The code **rsT** appears on the lower display.
 - To clear the entire alarm log, press the set button  for 10 seconds.
The following codes appear consecutively: **rsT**, **clr**, **noA**.



INFORMATION

Active alarms cannot be erased.

4.3.4 Overview of the error codes

If an error code appears on the in-cab controller display (HMI), check the alarm description, cause, and troubleshooting.

For your reference, a list of errors codes, alarms, and messages is provided in the following table. In case the alarm persists, contact your authorised installer.

4.3.5 Error codes

Error code	Alarm	Description	Possible cause	Troubleshooting
PrL PMI	Low pressure	After the intervention of the low pressure switch, the unit stops, and the alarm icon  and the error code PrL appear. When the correct pressure value is restored, the unit restarts automatically. In case of a frequent number of interventions in a given period, the error code PMI appears, which stops the unit completely.	▪ Refrigerant leakage ▪ Ice accumulated in the evaporator ▪ Evaporator fan failure ▪ Very low outdoor temperature (<0°C) ▪ Moisture in the circuit	▪ Perform a manual defrost and ensure that the evaporator(s) remains clean and free of obstructions ▪ Check the correct operation of the evaporator fans ▪ Change the dry filter
PrH PMS	High pressure	After the intervention of the high pressure switch, the unit stops, and the alarm icon  and the error code PrH appear. When the correct pressure value is restored, the unit restarts automatically. In case of a frequent number of interventions in a given period, the error code PMS appears, which stops the unit completely.	▪ Condenser fan failure ▪ Dirty condenser or insufficient air flow ▪ Moisture in the circuit	▪ Clean the condenser ▪ Check the condenser fan ▪ Check for obstacles in front of the condenser that obstruct the proper air flow ▪ Check the filter
F1t FtB	Electric motor protection (only for external power supply mode units)	After the intervention of the electric motor protection, the unit stops, and the alarm icon  and the error code F1t appear. The unit restarts automatically after some time. In case of a frequent number of interventions in a given period, the error code FtB appears, which stops the unit completely.	▪ Defective electric motor ▪ Low power supply voltage ▪ Power source too far from the unit ▪ Incorrectly adjusted suction pressure regulator valve (KVL)	▪ Check if the voltage is correct ▪ Check if there is a short circuit in the electric motor ▪ Check the setting of the thermal relay
E01	Probe failure	The alarm icon  and the error code E01 appear. The unit stops.	Temperature probe defective or not properly connected	Check the probe connection
PAb Ab	Battery voltage	The error code PAb indicates a decrease in the supply voltage. If the decrease is too large, the error code Ab appears and the unit stops. When the correct voltage is restored, the unit restarts automatically.	▪ Alternator not charging ▪ Battery in poor condition ▪ Excessive electric absorption	▪ Check the battery charge ▪ Check the efficiency of the vehicle electrical system ▪ Check the connection of the locked up (sub-key FSC) wire

Error code	Alarm	Description	Possible cause	Troubleshooting
ALM	Double power supply (only for external power supply mode units)	The alarm appears in case of simultaneous power supply from the external power supply and from the vehicle battery. This alarm stops the unit, the error code ALM appears, and the external power supply mode  and road mode  icons flash simultaneously.	- The ignition key is turned ON when the plug is still connected - The plug is connected when the vehicle is still ON	
SEE SEr	Maintenance	When a set number of operation hours is reached, the codes SEE (external power supply mode maintenance) or SEr (road mode maintenance) appear, alternating with the temperature display. The alarm can be temporarily reset by pressing any button. It will appear again after switching the unit OFF and ON. Contact the authorised service company for the scheduled maintenance and the maintenance alarm reset.		
noL	No in-cab controller (HMI) buttons communication	There is no communication between the in-cab controller (HMI) buttons and the PCB. The in-cab controller (HMI) buttons do not function. You can switch the unit OFF only by switching the vehicle OFF with the ignition key or by disconnecting the power supply plug.	Connection wire between the PCB and the in-cab controller (HMI) buttons defective or not properly connected	Check the wire and the connections on the PCB and the in-cab controller (HMI) buttons.
Pof Pon	Lock/Unlock the in-cab controller (HMI) buttons	The in-cab controller (HMI) buttons lock is active (enabled by simultaneously pressing up  and down  buttons for at least 5 seconds). The code Pof is displayed for 3 seconds when the in-cab controller (HMI) buttons are locked and you try to: - edit the setting, - access the programming, - switch OFF the in-cab controller. To disable the lock, press the up  and down  buttons simultaneously for at least 5 seconds, until the code Pon appears.		
rsT	Reset	The code rsT appears for 3 seconds when you press a button for the first time while an alarm is in progress.		

4.4 To set operating parameters

Some operating parameters can be changed.

- Press the programming button  for a few seconds.
Result: The first available parameter appears.
- Use the up/down buttons / to browse the parameters.
- To change the displayed parameter:
 - Press the set button .
 - Set the desired value with the up/down buttons /.
 - Press the set button  again to confirm the value.

5 Operation

5.1 Operation range

Use the system in the following temperature and humidity ranges for safe and effective operation.

Temperature range: -25°C to +45°C

Within the working range the cold room temperature can be set from -25°C to +28°C.

5.2 About road mode

The in-cab controller recognises that the unit is in road mode when:

- the vehicle is started, and

5 Operation

- the controller does not detect the presence of external power supply (plug connection to the power supply, if present).

The unit is completely autonomous with respect to the vehicle on which it is installed and can operate even during rest periods.

In road mode, the compressor is operated by a laminated diesel engine via an axial joint. The diesel engine also operates a 24 V DC alternator which:

- provides supply to the control components of the refrigerating circuit and the various control circuits,
- recharges the dedicated start battery.

5.3 About external power supply mode

The in-cab controller recognises that the unit is in external power supply mode when the power plug is connected to a compatible source of electricity.



INFORMATION

In case of continuous use alternating between external power supply mode and road mode, check periodically for the accumulation of ice in the evaporator.



CAUTION

External power supply mode is designed for intermittent, non-intensive use. It is NOT a substitute for a stationary refrigeration system with its own cell as it does NOT have the same technical characteristics.

5.4 About defrosting

During cooling, the air releases moisture that accumulates and gradually freezes between the evaporator fins. Freezing and the blockage of the passage of air could lead to reducing the system efficiency and even subsequent damage to the unit.

For this reason, the unit autonomously performs periodic defrost cycles to reduce the accumulation of ice and to drain water externally.

Hot gas defrost utilises the heat generated by the compression of the refrigerant gas, which is diverted directly into the evaporator to melt the accumulated ice. It is present on the units dedicated to the transport of frozen products and is generally recommended for units intended for the transport of goods at temperatures below +5°C.



INFORMATION

The defrost efficiency depends on the efficiency of drain water line.

- Check that the slant of the drain hoses enables the smooth flow of drain water.
- Periodically check the outflow of water from the drain hose.
- Reduce the opening time of the cold room doors to prevent the external moisture entering inside.
- Switch the unit OFF during loading and unloading of the goods.
- In case of intensive use of the unit, check that the evaporator is ice-free and periodically run a stop to ensure the complete melting of all ice.

5.5 About heating function (optional)

If the unit operates in particularly low ambient temperatures (in certain circumstances and/or periods of the year), heating may be necessary as an alternative to the cooling to keep the product temperature within the desired range.

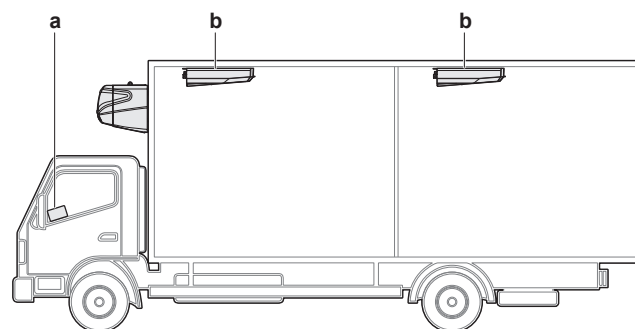
For example, some perishable products must be transported at temperatures between 5 and 10°C (41~50°F), even when outdoor temperatures drop below 0°C (32°F).

From the technical point of view, the heating operates on the same principles as hot gas defrosting, with an addition of the activation of the evaporator fans.

When the cold room setpoint temperature exceeds the measured temperature, the unit automatically switches to the heating mode, if required by the operating conditions.

5.6 About multi-temperature operation

Multi-temperature units allow the management of two compartments with different temperatures. The unit is equipped with two evaporators and a dedicated in-cab controller unit that manages the two temperatures independently of each other. The heating function is also included in the logic of operation.



a In-cab controller
b Evaporator

5.7 Loading the goods



WARNING



Zanotti is not responsible for cold room safety.

Make sure that no people are left in the cold room before you close the doors.



CAUTION

Turn on the light before entering the cold room, and take a portable torch with you.



NOTICE

Do not cover the air intake and outlet openings towards the condenser and evaporator of the unit.

Maintaining the right temperature guarantees the preservation of the quality of the transported goods.

Good air circulation is fundamental to keep a uniform temperature throughout the entire cold room. Insufficient air circulation can cause heat pockets or ice formation.

For this reason:

- Check the temperature of goods during loading to ensure that they are at the correct temperature during transport.

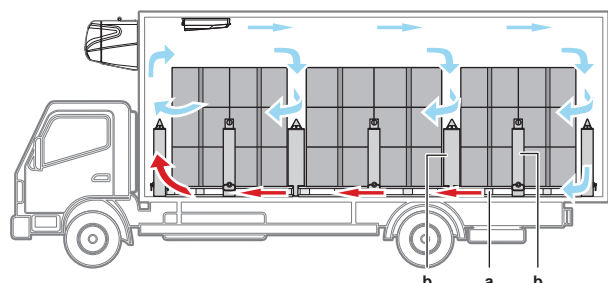


NOTICE

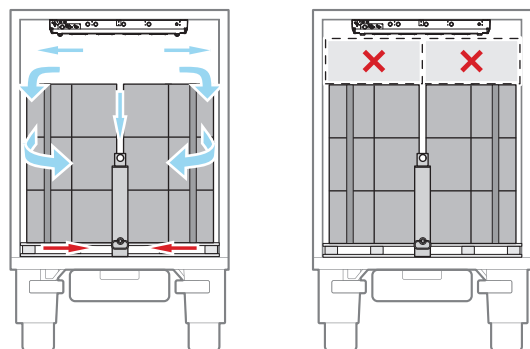
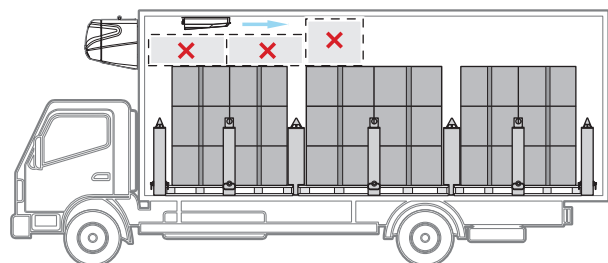
The refrigeration system is designed to maintain the temperature of the goods to the level of the loading temperature; it is not suitable for cooling hot products.

- Use pallets that facilitate air circulation under the goods, protecting them from the heat coming from the cold room floor. When using pallets, do not to stack other boxes on the floor at the back of the cold room.
- Leave a space of approximately 6-8 cm between the goods and the back of the cold room.

- Place the goods away from the cold room walls. Use spacers if necessary.
- Leave a space of approximately 20 cm between the goods and the cold room ceiling.
- Stack heat generating products, such as fruit and vegetables, in a way to create sufficient space to remove the generated heat by cold air circulation.
- Stack products which do not generate heat, such as meat and frozen foods, close to each other toward the centre of the cold room.



a Pallet
b Spacer



6 Energy saving and optimum operation



NOTICE

It is recommended to park the working unit in a shaded area.



NOTICE

Never leave the unit unused for longer than a month.

Before loading

- Cool the cold room in advance before loading the goods. Switch the unit ON before loading.
- If the cold room temperature reaches 4°C, perform a manual defrost to increase the efficiency of the evaporator.
- Check that the security grills of the evaporator fans are ice-free. Ice forms on the evaporator preventing air from flowing regularly. Clean the evaporator regularly with a small brush.



DANGER: RISK OF ELECTROCUTION

The unit must be switched off when cleaning the unit.
Make sure that all power supplies are OFF.

During loading



INFORMATION

Turn the unit off during loading and unloading of the cold room.

Always:

- Reduce the opening frequency of the cold room doors to prevent the external moisture and hot air entering inside.
- Make sure that a good airflow is possible between the stored goods. See "5.7 Loading the goods" [p 12].
- Before closing the doors, re-check the load and make sure that nobody is still inside the cold room.
- Depending on the products to be transported, select the temperature on the in-cab controller (see "4.2.3 To set the temperature" [p 9]).
- Make sure the goods are at their correct storage temperature (e.g., with a needle thermometer).
- Make sure that the cold room doors are closed.



WARNING



Zanotti is not responsible for cold room safety.

Make sure that no people are left in the cold room before you close the doors.

7 Maintenance and service



INFORMATION

Suitable maintenance is crucial for obtaining longer life, perfect working conditions and high efficiency of the unit. It also ensures the proper functioning of the safety devices provided by the manufacturer.

7.1 Scheduled maintenance

When a set number of operation hours is reached, the codes SEE (external power supply mode maintenance) or SEr (road mode maintenance) appear, alternating with the temperature display.



WARNING

Maintenance can be carried out ONLY by authorised personnel.



CAUTION

Before carrying out any maintenance activities, make sure that the in-cab controller is switched OFF and that the unit cannot start.



NOTICE

It is recommended to replace the engine oil at least once a year, even if the expected number of engine operating hours has not been reached.



NOTICE

The maintenance intervals outlined in this manual are indicative and may vary. For scheduled maintenance, follow the alarm warnings.

8 Troubleshooting

Road mode maintenance schedule (alarm code SEr)

Operation hours	First check	Maintenance A	Maintenance B
100	•		
800		•	
1600		•	•
2400		•	
3200		•	•
4000		•	
4800		•	•
5600		•	

External power supply mode maintenance schedule (alarm code SEE)

Operation hours	Maintenance E
1000	•
2000	•
3000	•
4000	•
5000	
6000	
7000	

First check	- Check the compressor belt tension. - Check that there are no vibrations on the engine at low speed and that the compressor is securely fastened. - Check the tightness of bolts and screws on the unit and on the compressor kit.
Maintenance A	- Clean the condenser and the evaporator. - Check the oil level in the External power supply mode compressor. (only units with s-h compressor) - Check the defrost cycle operation and the efficiency of the condenser drain. - Clean the battery and its terminals. - Check the refrigerant charge. - Check the functions of the in-cab controller. - Check and clean the electrical connections. - Check the tightening torque of bolts and screws on the compressor kit. - Replace the transmission belts.
Maintenance B	- Check the bearings of the belt tensioners and bearings of the mechanical units. - Check the condenser and evaporator fans.
Maintenance E	- Check voltages and currents of the following components: - transformer, - diode bridge, - AC motor. - Clean the electrical connections and check their efficiency. - Check the intervention value of the thermal relay F1T.
Every 6 months	Thoroughly clean the condenser. See "7.2 To clean the condensers" [p 14].
Every year	- Replace the filter dryer. - Check and clean the thermostatic expansion valve opening.

Every 2 years	- Change the oil in the compressors (use polyester POE oil only). - Replace the refrigerant gas. - Replace the thermostatic expansion valve opening.
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7.2 To clean the condensers



WARNING

Maintenance can be carried out ONLY by authorised personnel.



DANGER: RISK OF ELECTROCUTION

The unit must be switched off when cleaning the unit.
Make sure that all power supplies are OFF.

To ensure consistent unit performance, it is recommended to clean the condenser at least every 6 months.

Start with the first step and, if necessary, continue with the next step until the desired result is achieved.

- 1 Clean the condenser with compressed air and a brush with soft bristles. It is advisable to direct the air from the inside towards the outside.



CAUTION

Be careful not to damage the fins during the cleaning process.

- 2 If the residues in the condenser cannot be removed by the procedure described above (e.g. soil, salts, mushrooms, mould, etc.), further cleaning may be required. A suitable product is the DEK 34 Alluter by Unison or equivalent. Always be sure to follow the specific instructions of the manufacturer.

8 Troubleshooting

If one of the following malfunctions occurs, take the measures shown below and contact your dealer.

The system MUST be repaired by a qualified service person.

Malfunction	Cause	Measure
The unit does not switch ON when pressing the ON/OFF button  despite having turned the vehicle ignition key ON or connecting to the external power supply	- Low battery - Battery disconnected - Battery fuse disconnected - Alternator not charging - Locked up (sub-key FSC) wire disconnected - Faulty power cable - Burned 5A fuses on the PCB	- Check if the LED of the ON/OFF button  lights up - Check the battery fuse FB
During road mode operation, the unit is switched ON but the temperature does not decrease and there is no alarm	Road compressor is not driven	

After checking all the items above, if it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date.

8.1 Fuses

Most of the fuses are located inside the electrical panel and on the printed circuit board (PCB).

The battery fuse is connected directly to the positive cable during installation. The amount of fuses varies depending on the model and options in the unit.



CAUTION

Make sure that the unit is disconnected from all power supplies before accessing the electrical box.

To access the electrical box:

- 1 Remove the left side panel of the condenser (according to the direction of travel of the vehicle).
- 2 Remove the cover plate of the electrical box.

8.1.1 Fuse list

Abbreviation	Type	Description	Location	400 V/3 N/50 Hz	24 V
FS		Transformer main fuse	Electrical panel	4 A (x2)	-
FGR		Transformer secondary fuse	Electrical panel	-	30 A
FGS		Transformer secondary fuse	Battery	-	40 A
FB		External power supply mode CPU guard fuse	PCB	-	5 A
FR		Road mode CPU guard fuse	PCB	-	5 A
FFR		External power supply compressor guard fuse	PCB	-	10 A
FFS		Road compressor guard fuse	PCB	-	10 A
FSS		Defrost solenoid valve guard fuse	PCB	-	10 A
F6-F6/1		Condenser fan guard fuses	PCB	-	20 A
F8-9-10-11		Evaporator fan guard fuses	PCB	-	15 A

9 Disposal

Packaging must be disposed of according to the regulations that are in effect in the country where the unit is used.



NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation.

Final disposal of the unit must be done by an authorised area technical assistance service, that has proper training, equipment and instructions for the dismantling. They are also responsible for reuse, recycling and recovery.



CAUTION



There are potential environmental hazards involved in dismantling the unit.

10 Glossary

Accessories

Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Applicable legislation

All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Authorised installer

Technical skilled person who is qualified to install the product.

Dealer

Sales distributor for the product.

External power supply mode

Also grid mode or stand-by mode. Mode in which the unit is powered by an external power supply source.

10 Glossary

Field supply

Equipment NOT made by Zanotti that can be combined with the product according to the instructions in the accompanying documentation.

HMI

Human Machine Interface (or in-cab controller). Screen that communicates information, data and metrics using graphics or visual representations.

Installation manual

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Maintenance instructions

Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Operation manual

Instruction manual specified for a certain product or application, explaining how to operate it.

Optional equipment

Equipment made or approved by Zanotti that can be combined with the product according to the instructions in the accompanying documentation.

PCB

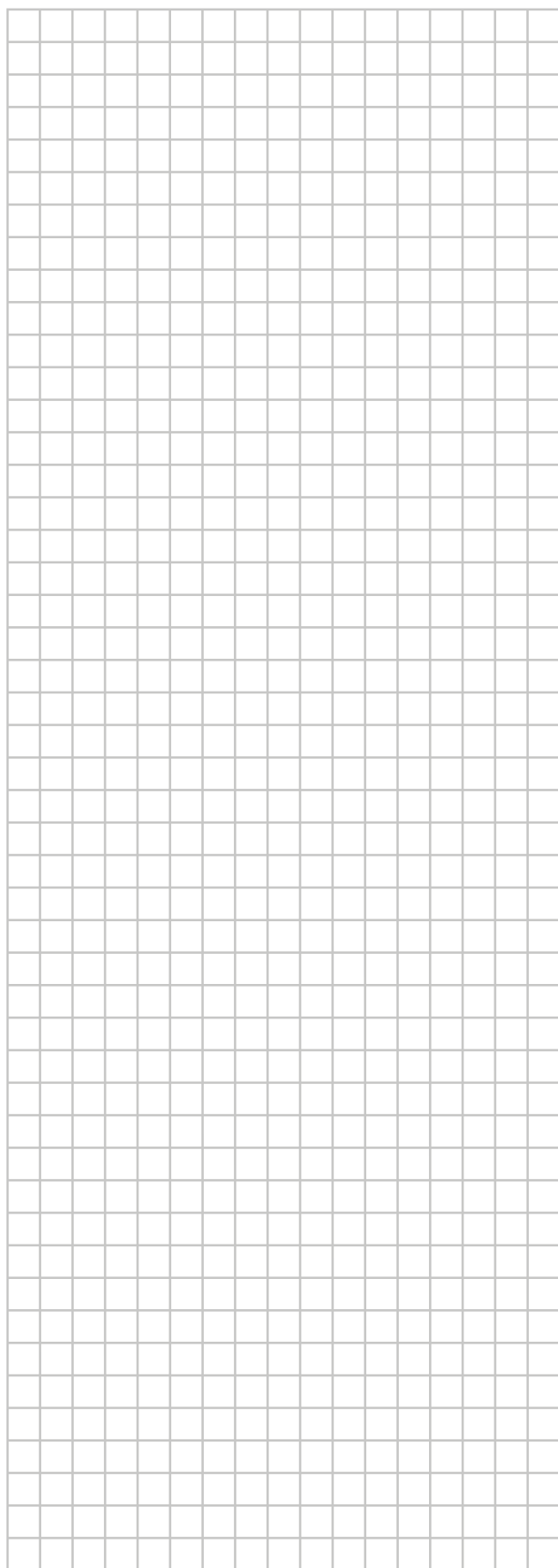
Printed circuit board

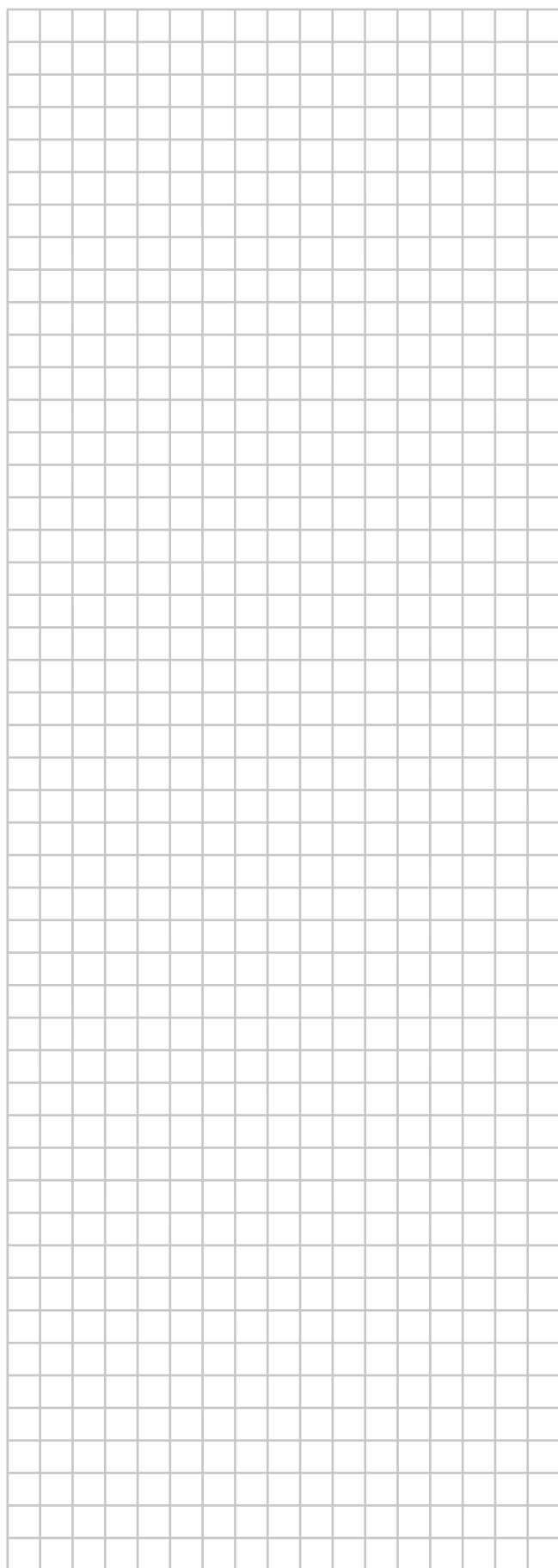
Service company

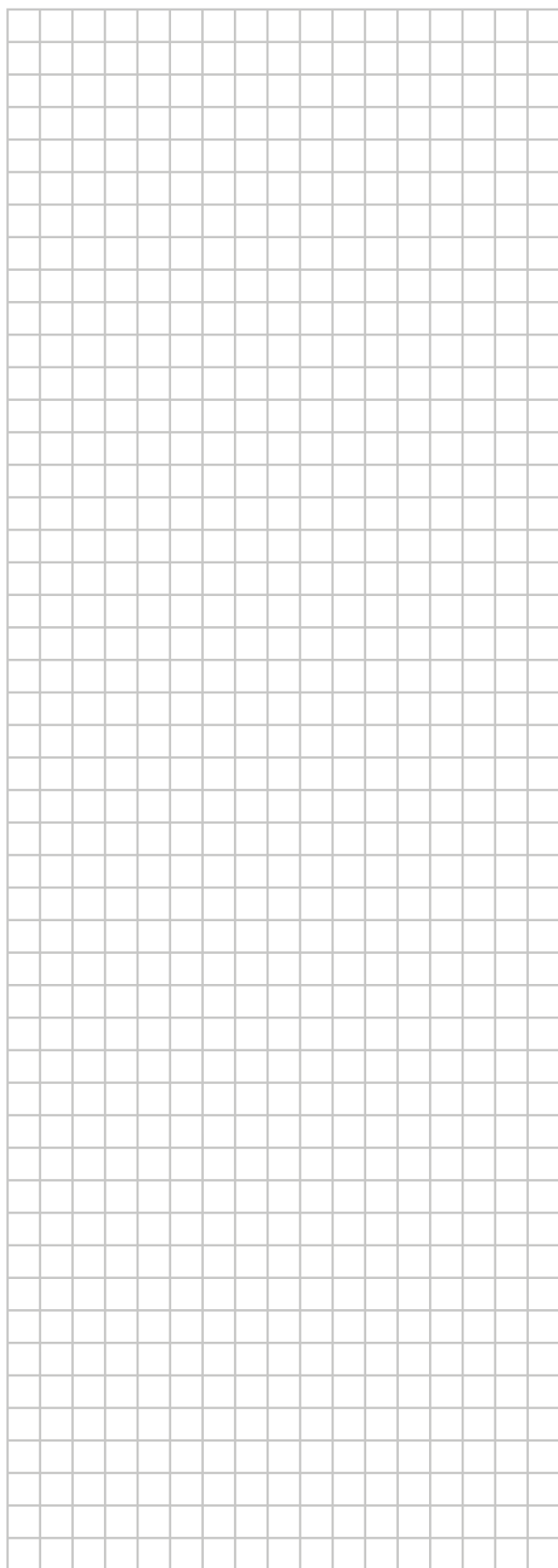
Qualified company which can perform or coordinate the required service to the product.

User

Person who is owner of the product and/or operates the product.









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