

# INSTALLATION, USER AND MAINTENANCE MANUAL

**SKIMO**



Product code :           320B25 – SKIMO SPLIT PLUS KIT



Read this manual carefully until you understand it before unpacking,  
installing or using the Skimo unit.  
Keep this manual for further reference.





The 2 years warranty only applies under normal operation of the SKIMO SPLIT PLUS A/C unit.

**\* Limited warranty**

The warranty doesn't cover damages resulting from an incorrect operation of the SKIMO SPLIT PLUS A/C unit, particularly for the following cases:

- /// Operating in an environment with high salinity
- /// Operating in an environment with high acidity
- /// Cleaning with a pressure washer and/or with detergents
- /// Consumable parts (filters) or considered as wear parts are also excluded from warranty.

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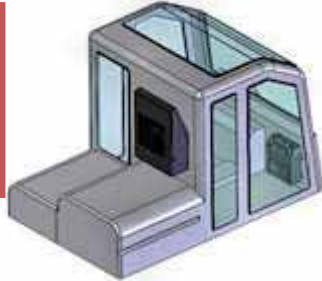
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If you have any question regarding the installation and use of the kit SKIMO SPLIT, please contact our quality service:  
**+33 (0)5 34 480 480**

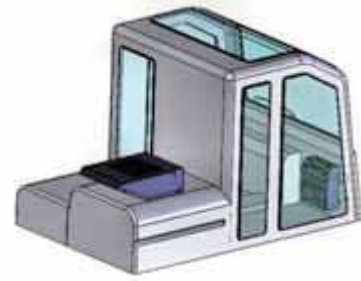
## 1. INTRODUCTION

The SKIMO SPLIT PLUS KIT described in this manual, is composed of an outside unit SKIMO SPLIT PLUS and an evaporator unit to be positioned inside the cabin. The compressor - condenser unit can be installed horizontally on a wall or flat on a hood (see pictures).

ATTENTION TO THE MOUNTING ORIENTATION!  
 THE BEVEL SIDE TO THE TOP



Wall mounting



Flat mounting

The SKIMO SPLIT PLUS KIT is particularly adapted to the compact machines with little room or a small driving power, to the machines the cabin of which is far from the engine and to the users wishing a fast and easy assembly. The SKIMO SPLIT PLUS unit has the compressor integrated and driven by an electric motor. 2 units will be linked between them by 2 hoses (high and low pressure) and electrically by a harness. (See the recommendations on the power supply with the rest of the vehicle). The charge of refrigerant R134a will be made by a qualified and approved technician.

## 2. SECURITY INSTRUCTIONS AND WARNINGS

You must read and understand this manual before proceeding to the installation, set-up, use and maintenance of the SKIMO SPLIT PLUS KIT.

### List of pictograms used in this manual or on the unit:

Pictogram	Meaning	Pictogram	Meaning
	Conform to CE standard		General danger
	Read and understand the manual		Physical danger
	Important information		

The SKIMO SPLIT PLUS SKIT must be installed by a person qualified and adequately equipped. All alteration of the unit or incorrect installation is strictly forbidden and can be dangerous. SNDC SAS cannot be held responsible in the case of physical or material damages due to an alteration, installation or use that is different to that described in this manual











The SKIMO SPLIT PLUS unit weights approximately 30 kg. Take necessary precautions when handling, installing and using the unit to avoid any risk of injury, fall or damage. Do not handle or install the SKIMO SPLIT PLUS unit on your own.

Do not store, install or use the SKIMO SPLIT PLUS KIT close to flammable liquids, gas or solids, or close by a heat source or in a place presenting risks of explosion or fire.

If the SKIMO SPLIT PLUS KIT is damaged, it must not be used or turned on. It must be repaired or replaced first.

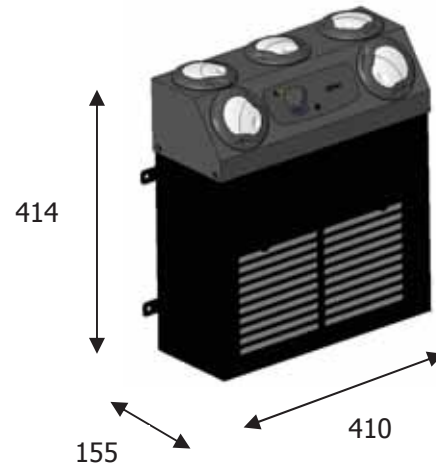
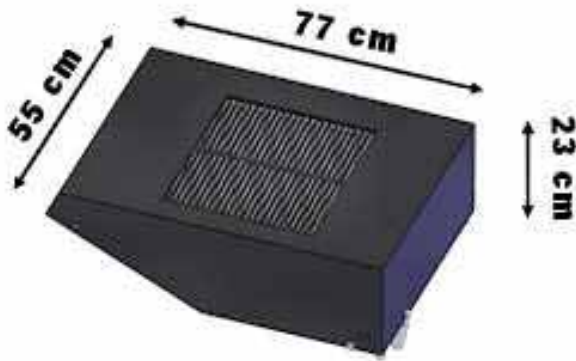
If repairs or maintenance operations are required on the SKIMO SPLIT PLUS KIT, use a qualified company using qualified personnel to perform the operations. Any repair or maintenance operation that is not done properly can create

risks of danger. Do not try to repair the SKIMO SPLIT PLUS by your own means if you are not qualified. For the charge or maintenance of the A/C refrigerant circuit, use a qualified company that is equipped with appropriate tools and security equipment and that uses original spare parts.

-  Do not alter cabins that are certified « FOPS-ROPS »
-  In case of fire, do not open the unit cover. Extinguish the fire with an appropriate fire extinguisher for electrical and A/C units.
-  Contact the vehicle or machine supplier to enquire of the necessary changes regarding the papers (height of vehicle, weight...). Perform any necessary changes.
-  Always turn the SKIMO SPLIT PLUS KIT and the vehicle or machine off before an operation of maintenance.
-  Disconnect all the electrical connections to the machine before fixing, or repairing the SKIMO SPLIT PLUS KIT or before any operation that could involve getting in contact with the electrical circuit.
-  Do not introduce foreign objects inside the SKIMO SPLIT PLUS unit.
-  The SKIMO SPLIT PLUS SKIT contains moving parts that represent a danger. Do not disable the security features. Switch the SKIMO SPLIT PLUS unit and the machine or vehicle off before opening the unit or taking the cabin panel off.
-  The A/C refrigerant circuit is under pressure. Do not open the A/C refrigerant circuit. This would create a loss of refrigerant gas that is colourless and odourless. It could create serious burns. The person performing the repair or maintenance of the A/C refrigerant circuit must be qualified to manipulate such systems and must use appropriate tools, equipment and protection equipment. Wear protection goggles and gloves when you maintain the SKIMO SPLIT PLUS unit. Rejecting refrigerant gas in the atmosphere is strictly forbidden.
-  The SKIMO SPLIT PLUS KIT must be maintained and cleaned up regularly from dust, vegetal or other wastes or combustibles to avoid risks of fire.
-  Use only original spare parts.

### 3. TECHNICAL CHARACTERISTICS OF THE SKIMO SPLIT PLUS KIT

The SKIMO SPLIT PLUS unit is the element positioned outside, it includes the following components: the condenser, the drying filter, the compressor, the electric components (electrical motor, fan, blower, harness, fuses), but also the electric harness of connection with the vertical evaporator unit positioned inside the cabin.

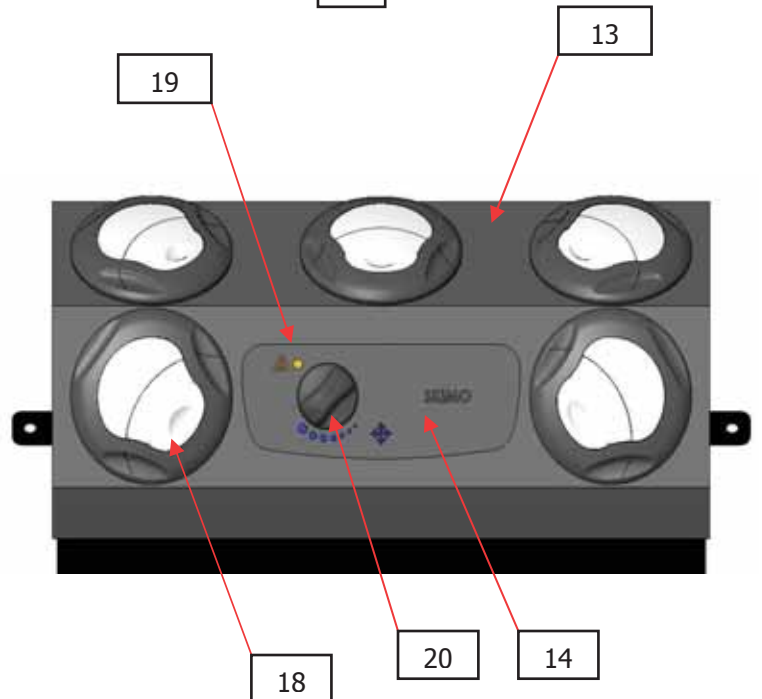
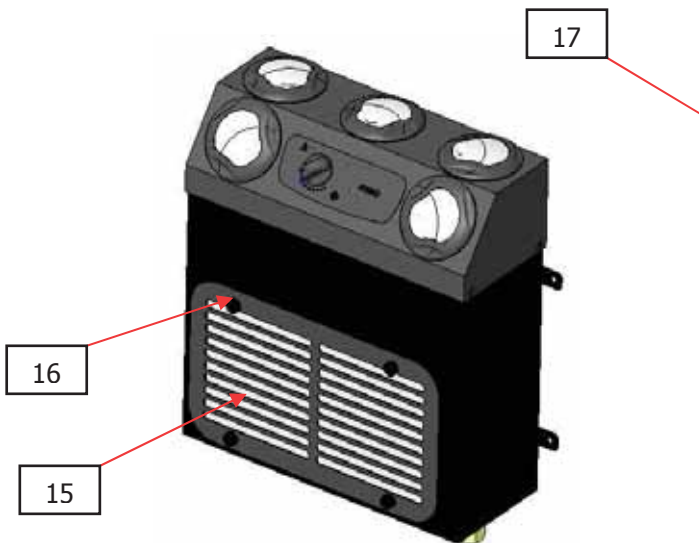
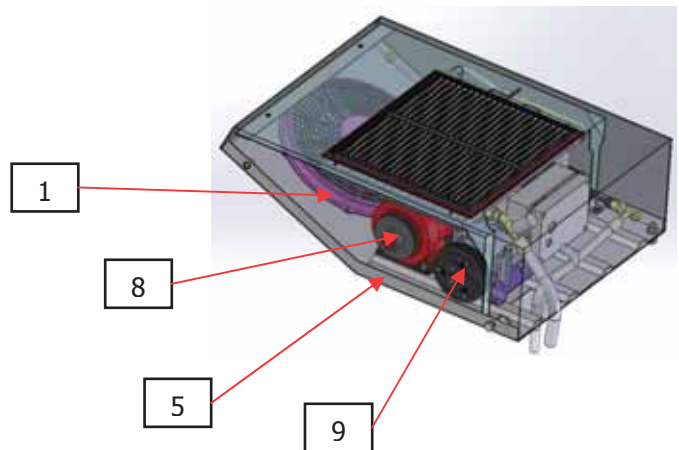
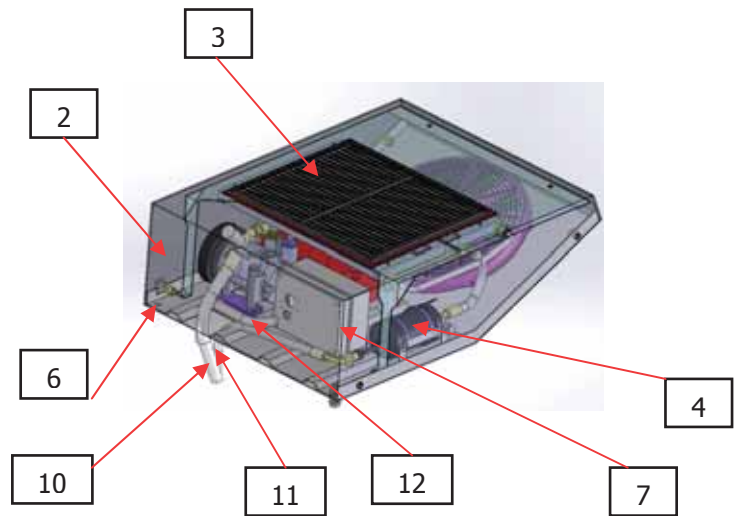


- External dimensions:
  - SKIMO SPLIT PLUS unit (+ ou - 1cm) : length 77 cm, width 55 cm, height 23 cm
  - Vertical evaporator unit (+ ou 1 cm) : length 41 cm, width 15.5 cm, height 41.5 cm.
- Weight :
  - SKIMO SPLIT unit 35 kg
  - Vertical evaporator unit 10 kg
- Evaporator cooling capacity: 3500 W with +31°C air intake and 50% air humidity.
- Maximal consumption: 1920W (that is 80 Amps electrical current for a 24V unit).
- Refrigerant HFC R134a quantity : according to the position of the outside SKIMO SPLIT PLUS unit (see board in chapter number 12)
- Oil: PAG 150 46 (SNDC Ref 430A08)

#### 4. SKIMO SPLIT PLUS KIT DESCRIPTION

##### N° DESCRIPTION

1. Condenser fan
2. SKIMO SPLIT cover
3. External air intake grids
4. Drying filter
5. SKIMO SPLIT PLUS casing
6. M8 unit fastening screws (4)
7. Seal box of fuses and relays
8. Electric motor
9. Compressor
10. LOW-PRESSURE gas connection
11. HIGH-PRESSURE gas connection
12. Electrical harness
13. Control and air distribution plenum
14. Control panel
15. Air filter access grid
16. Grid fastening screws
17. Vertical evaporator unit fixations
18. Adjustable air louvers
19. Default signal light
20. A/C and ventilation speed selector switch





## 5. BEFORE FITTING THE SKIMO SPLIT PLUS KIT

Prior to fitting and using the SKIMO SPLIT PLUS KIT, check the following points:

**Cabin volume:** Ideally the volume of the cabin is approximately 3m<sup>3</sup> but if it is over 4m<sup>3</sup> the performances of the SKIMO SPLIT PLUS system will decrease.

**Cabin insulation:** The cabin walls must be properly insulated, especially from important heat sources (engine, exhaust pipe, hydraulic system ...). SNDC SAS cannot be held responsible in the case of poor performances of the SKIMO SPLIT PLUS system caused by poor cabin insulation.

 **Electrical power:**  
The machine or vehicle engine must be equipped with an alternator able to supply the electrical power required from the vehicle or machine AND from the KIT SKIMO SPLIT PLUS. The SKIMO SPLIT PLUS system maximal consumption is 1920W (80 Amps for a 24V unit). If the vehicle or the machine is equipped with an alternator that is not powerful enough, it must be replaced by a suitable alternator.

 **Roof and ceiling:**  
Do not alter or make a hole in the cabin of vehicles that are certified « FOPS-ROPS »  
The wall must be stiff and strong enough for the Skimo SPLIT PLUS unit to be installed on. If it is not the case, the wall must be reinforced.  
The SKIMO SPLIT PLUS unit must not be installed if it would affect the stability of the vehicle or machine it is installed on, or if it would create excessive strains on its structure.  
Make sure using the drawing showing the dimensions of the unit and the cut-out area that there is enough space to fit the unit outside on the wall and the vertical evaporator unit n panel inside the cabin.  
The surface on which unit is installed must be flat and horizontal (+/- 5°).  
The cabin panel must be installed inside the cabin, and the user must be able to access the controls from his driving position while using the vehicle or machine.



## 6. FURNITURE REQUIRED TO INSTALL THE SKIMO SPLIT PLUS KIT

- Two 16 mm<sup>2</sup> diameter cables to connect SKIMO SPLIT PLUS to the vehicle's battery : a black one for the ground and a red one for the positive, fitted with one M6 crimp and one M8 crimp terminals on the SKIMO SPLIT PLUS's end and crimp terminals on the battery's end (according to the battery's connection type, generally M10)



**Caution: Maximum cable length: 5 m**

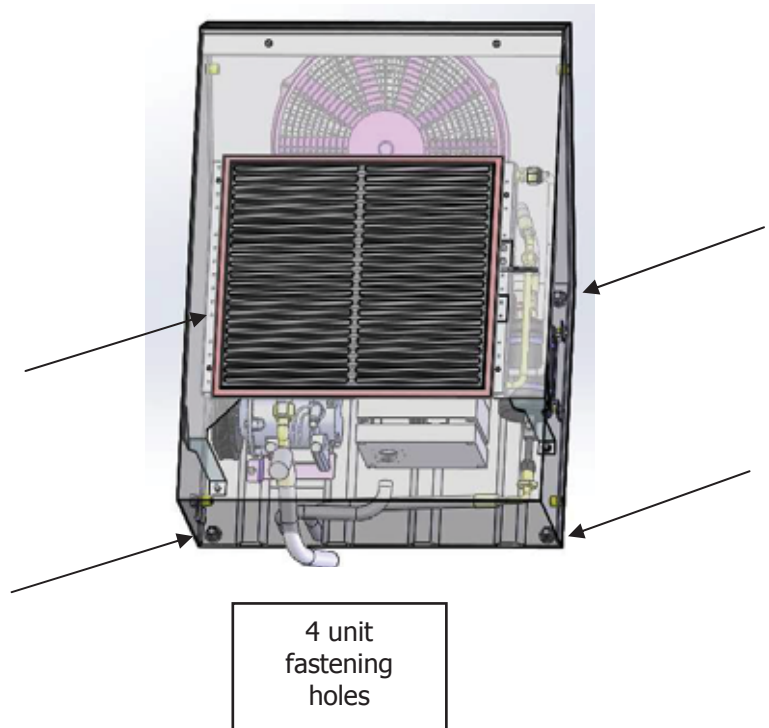
- One 1 mm<sup>2</sup> diameter cable to connect SKIMO SPLIT PLUS to the D+ signal ("engine running") of the alternator, with a 1 way FASTON connector (male housing, female contact) and a connector on the other end to connect to the D+ signal coming from the alternator.
- A fuse holder and a 100Amps fuse.



The above mentioned components are available as a connection optional set, reference **274B56**.

## 7. PREPARATION OF THE SKIMO SPLIT PLUS

1. Open the cardboard of the SKIMO SPLIT unit.
2. Remove the foam protection surrounding the 2 units.
3. Take the SKIMO SPLIT unit, remove the 4 screws of the cover to reach in the 4 unit fastening screws

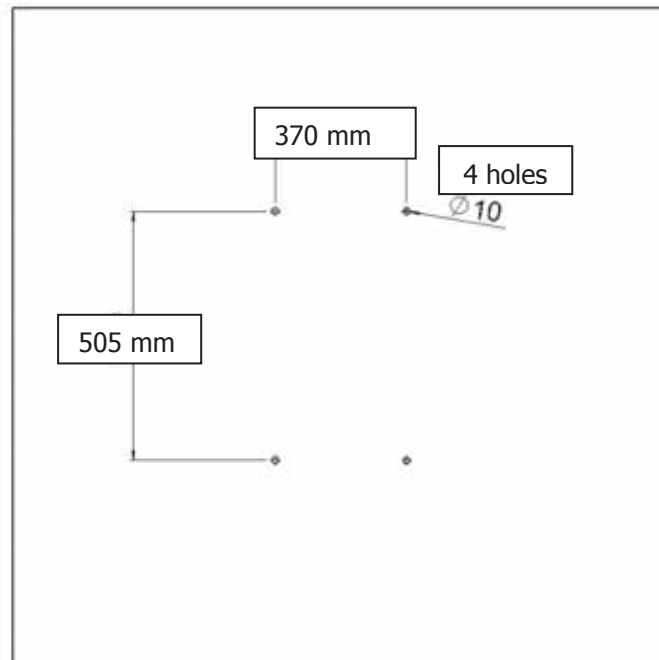




## 8. CABIN WALLS PREPARATION TO RECEIVE THE UNITS

### - Preparation for fastening the SKIMO SPLIT PLUS unit

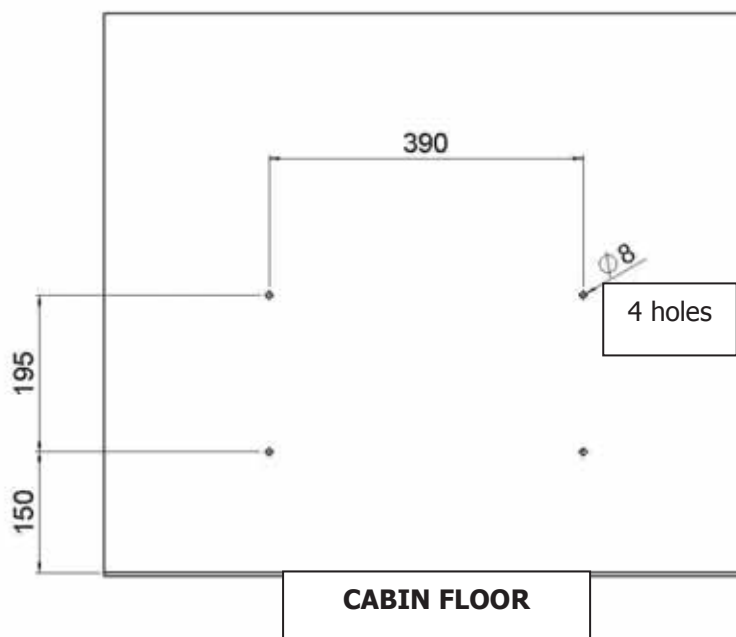
Dimensions en millimeters (mm)



Drill in the chosen wall 4 holes in diameter 10 mm according to the plan of setting-up above.

### - Preparation for fastening the vertical evaporator unit

Dimensions en millimeters (mm)



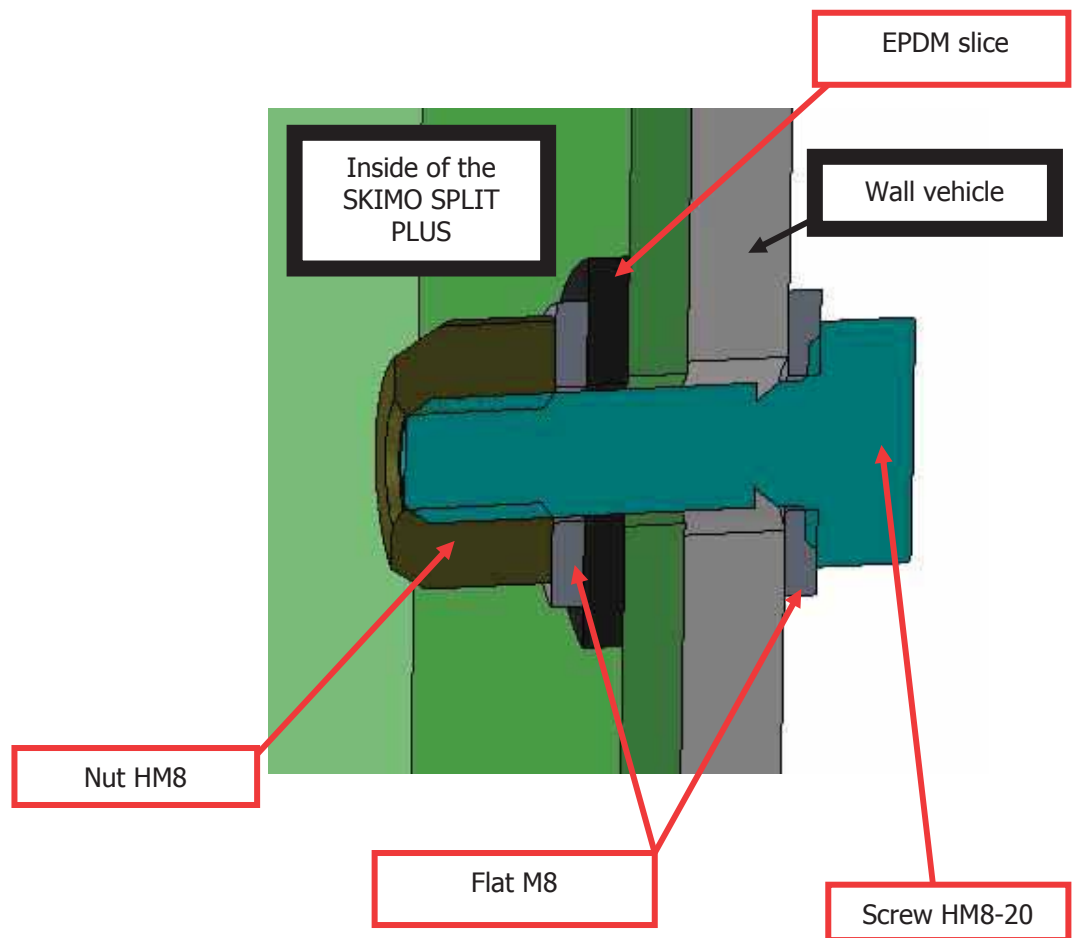
Drill in the chosen wall 4 holes in diameter 8 mm according to the plan of setting-up above.

## 9. INSTALLATION OF THE SKIMO SPLIT PLUS KIT

**!** The SKIMO SPLIT PLUS unit is heavy (approximately 35 kg). Take necessary precautions to avoid hurting yourself or damaging the unit. Never install the unit on your own.

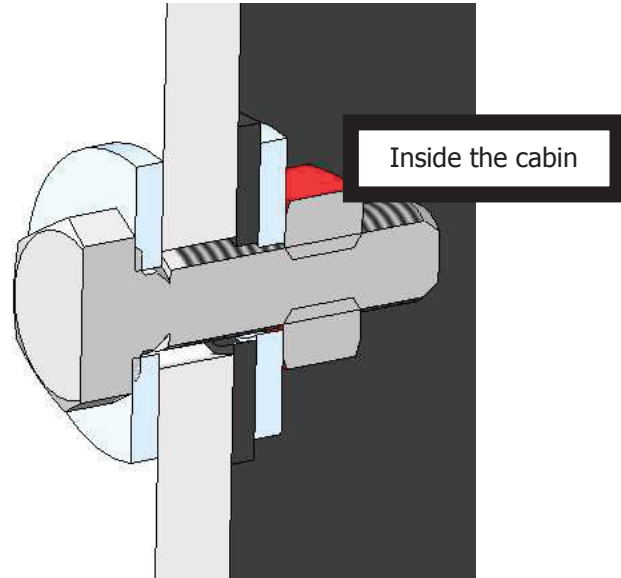
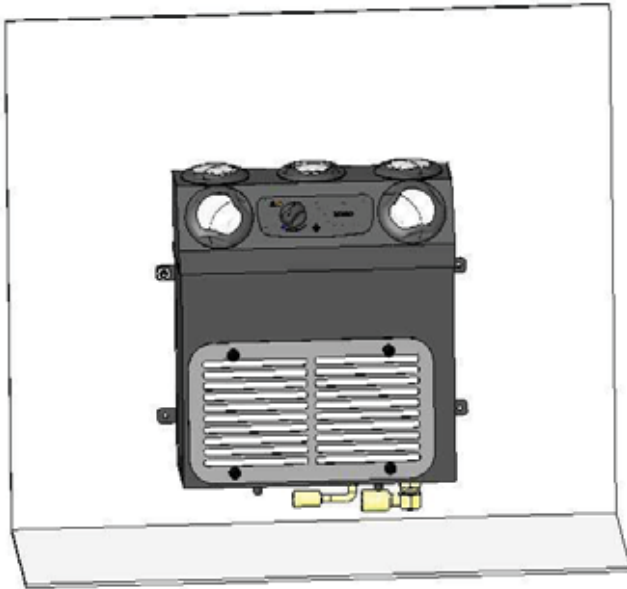
### - Location of the SKIMO SPLIT PLUS unit

\* Fix the SKIMO SPLIT PLUS unit to the wall by means of the supplied stainless screws 4 HM8-20 + 8 flats M8 and 4 slices EPDM 8.5x20mm and 4 nuts HM8.



**- Location of the vertical evaporator unit**

\* Fix the vertical evaporator unit to the wall by means of the supplied stainless screws 4 HM6-25 + 8 flats M6 and 4 nuts HM6.

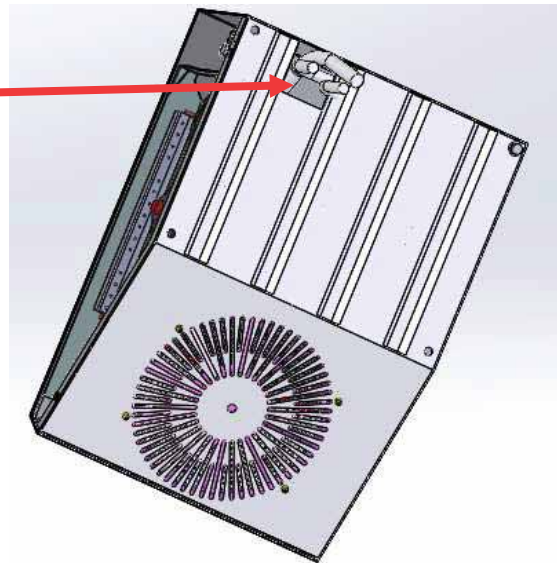


## 10. ELECTRICAL CONNECTION

**⚠ The installer must make sure that the cables are insulated and protected from any risk of deterioration or tear-up (from branches for example) and that they do not present any risk for people or appliances.**

The passage of electric cables will be made on the side of the unit.

Passage de câble



**⚠ Do not lay the cables out near the motor and compressor belt located at the back of the unit.**

**Once the cables laid out, connect them as follows to the Skimo unit electrical motor:**



1. Take the 2 nuts of the motor (+) terminal off. Insert the red cable through the rubber cover.




2. Screw the nuts back on onto the red cable and red wires crimp terminals and the washer.



3. Put the rubber cover back into place. Repeat 1 and 2 on the motor (-) terminal with the ground black cable and wires.

4. Connect the cables to the battery or to the alternator. The fuse housing with its fuse (100 Amps) must be fitted on the red positive cable less than 15cm away from the crimp terminal connected to the (+) terminal of the battery or of the alternator.

**⚠ Caution: The positive (+) cable MUST be protected by a 100Amps fuse located as close as possible to the power source.**

 **Make sure that the section of the cables between the battery and the alternator is big enough for the current required by the SKIMO SPLIT (80 Amps) and by the other electrical equipments of the vehicle.**

5. Connect the 1-way FASTON located inside the cabin to the D+ signal from the alternator (signal indicating that the engine is running) with a 1mm<sup>2</sup> section cable.

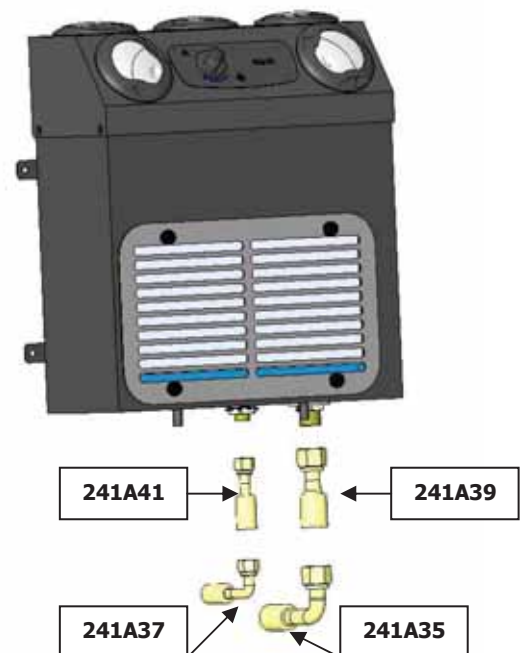
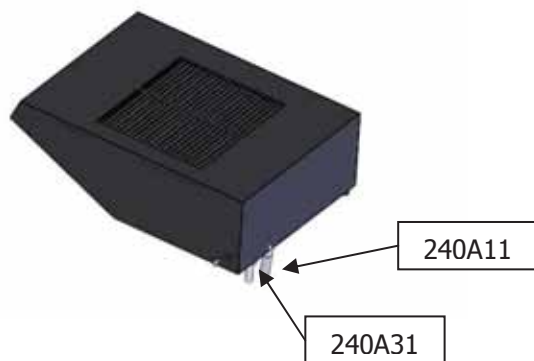
6. Plug the ventilator connector back and fasten unit cover back on with its 4 screw.

## 11. REFRIGERATED CONNECTING OF THE SKIMO SPLIT PLUS KIT

Connect the SKIMO SPLIT PLUS unit and the vertical evaporator unit by 2 hoses with oring steel fittings to be determined by the customer:

- A flexible hose M6, high pressure, connecting the entrance of the evaporator unit to the entrance of the SKIMO SPLIT PLUS unit.
- A flexible hose M10, low pressure, connecting the exit of the SKIMO SPLIT PLUS unit with the exit of the vertical evaporator unit.

**⚠ Lubricate lightly each Oring with the same oil SP10 or PAG 46 than for the compressor before connecting any fitting. Make sure the hoses be correctly connected, so as not to be in contact with cutting parts or heat source. When flexible hoses cross a wall, it's necessary to use one thread rubber or adapted protective plastic ducts.**



## 12. CHARGE THE KIT SKIMO SPLIT WITH REFRIGERANT R134A

The charge of R134A of the SKIMO SPLIT PLUS KIT will be a function:

- Of the position of the SKIMO SPLIT PLUS unit outside
- Of the total length in flexible hose.

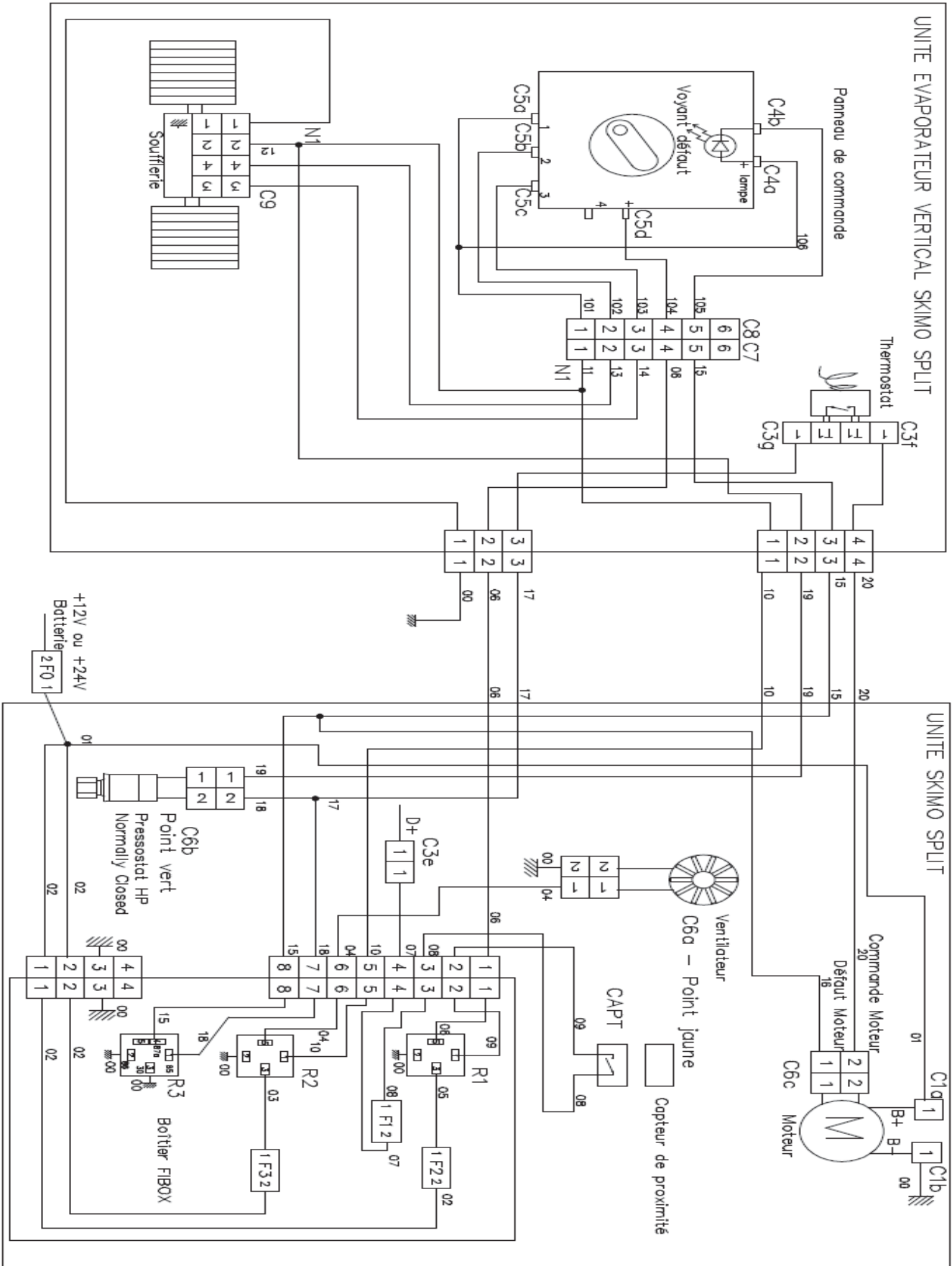
Length flexible hoses	Position SKIMO SPLIT PLUS unit	
	Flat	Horizontally
2 meters	700 g	700 g
4 meters	720 g	720 g
6 meters	770 g	770 g

These gas quantities are given more or less 50g.


 **For the charge or maintenance of the A/C refrigerant circuit, use a qualified company that is equipped with appropriate tools and security equipment and that uses original spare parts.**




### 13. ELECTRICAL DRAWING



## 14 SKIMO SPLIT PLUS KIT USE


 **The SKIMO SPLIT PLUS KIT is designed to run when the vehicle's engine is running. If the unit is turned on while the vehicle's engine is off, the alternator will not feed the unit and there is a risk of battery discharge.**


 The ability of the SKIMO SPLIT PLUS to maintain the required temperature inside the cabin depends on the amount of heat that penetrates inside the cabin. Some preventive measures are necessary to lower the amount of heat that enters the cabin and to improve the performances of A/C system:


- Park the machine or the vehicle in the shade.
- Drive for a few minutes with the windows opened to lower the temperature inside the cabin before turning the A/C unit on.
- Keep the doors and windows closed while using the A/C unit.
- Avoid using devices that produce heat.

### **Operating modes:**

- Once the SKIMO SPLIT PLUS KIT is installed and the vehicle's engine is running, turn the control panel ventilation speed selector switch to first speed to turn the unit on. The first ventilation speed and the air conditioning are turned on.
- Adjust the ventilation speed to 1, 2 or 3 according to your requirement with the ventilation speed selector switch.
- To switch the unit off, turn the ventilation speed selector switch to 0.

 Switch the SKIMO SPLIT PLUS KIT off if the vehicle's or machine's engine runs on low speed for an extended amount of time (for over 15 minutes). If not, there is a potential risk of battery discharge due to the fact that the alternator might not supply enough power when the engine runs at low speed. The SKIMO SPLIT PLUS unit would turn to security mode. If that happens, refer to section 15.

 It is normal for the internal thermostat to regulate the A/C unit if the blowing temperature is too low, in which case the blowers still run but the air conditioning is turned off for a while.

 SNDC SAS cannot be held responsible for condensation appearing on the cabin's surfaces. The air contains moisture that tends to condensates on cold surfaces. Appropriate cabin insulation can prevent or lower the risks of condensation.

## 15 REPAIRS



If the A/C circuit hasn't got the correct amount of gas, the performances of the A/C system will lower. If it seems that your SKIMO SPLIT PLUS unit doesn't work properly, you should take it to an A/C specialist.



**Never try to repair faults by your own means. Repair and recharge of an A/C circuit must be carried out by a specialist that is qualified, certified, equipped with necessary tools and that will use original spare parts.**

If one of the security systems is activated, the air conditioning system is turned off (no more cold production) and the default light is switched on on the control panel.

To reset the Skimo A/C unit after a security cut off, turn it off and on again. A security cut off should not be a recurring feature. In the case of repeated cut offs, contact your qualified specialist.



**Error codes:**

Error code	Failure	Repair required
1 blink	Overheating of the electrical motor. The temperature of the motor went over 113°C. The unit can be reset by switching it off and on again only once the motor's temperature is lower than 109°C	Check that the air way cooling the electrical motor is not clogged up. <b>To be done by an A/C specialist: Check that the A/C circuit hasn't got too much gas R134a.</b>
2 blink	The battery is flat. The tension of the battery went lower than 14V (for a 24V unit)	Check that the battery gets charged up properly and that the alternator is powerful enough. Check that the vehicle's engine doesn't run at low speed for extended periods of time (over 15 minutes)
3 blink	Over consumption of the electrical motor	Check the power consumption of the SKIMO SPLIT PLUS. <b>To be done by an A/C specialist: Check that the A/C circuit hasn't got too much gas R134a.</b>
6 blink	Low voltage. The tension of the battery went lower than 20V (for a 24V unit).	Check that the battery gets charged up properly and that the alternator is powerful enough. Check that the vehicle's engine doesn't run at low speed for extended periods of time (over 15 minutes)
Light on continuously	A/C system gas low pressure. The pressure switch is activated for a pressure lower than 2 bars in the high pressure part of the circuit in case of the quantity of gas being too low (caused by a leak for example).	<b>To be done by an A/C specialist: Check the airtightness of the A/C circuit and recharge with R134a gas.</b>
Light AND electrical motor on and off	A/C system gas high pressure. The pressure switch is activated for a pressure higher than 14 bars in the high pressure part of the circuit.	Check that the condenser is not clogged up. <b>To be done by an A/C specialist: Check that the A/C circuit hasn't got too much gas R134a.</b>
Light not on but unit not working	The Skimo A/C is not working properly but the default light is not switched on. This can be due to an electrical problem.	Check that the default LED light works properly. Check the fuses, the relays, the electrical harness, the connectors and the electrical connection between the Skimo unit and the vehicle or the machine.

There are two other security systems on the SKIMO SPLIT PLUS KIT:


Compressor security: The compressor is equipped with a security pressure valve to protect the system in case of a pressure switch failure.


Machine security: The SKIMO SPLIT PLUS unit is equipped with a sensor that disables the SKIMO SPLIT PLUS unit if the cover is opened.



**Use only original spare parts.**

## 16 MAINTENANCE

 The SKIMO SPLIT PLUS must be maintained and cleaned up regularly from dust, vegetal or other wastes or combustibles to avoid risks of fire. The frequencies listed below are for reference only. The maintenance must be done more frequently if the working environment can lead to clogging up, premature wear or deterioration of some parts.

 The SKIMO SPLIT PLUS unit contains parts that are moving that can present a danger. Never disable the security features. Always turn the unit and the vehicle off before opening the cover or taking the cabin panel off.

 Switch the unit off before any maintenance.

### **Every 50 hours:**

Clean the dust filter  
 Check the condenser, the ventilator, the main casing. Clean if necessary

### **In winter:**

Turn the Skimo Split Plus A/C unit on once a week even for a short time (1 minute) to guarantee the lubrication of the seals inside the A/C circuit.

### **Every 200 hours:**

Check the motor-compressor belt tension:  
 Tension too high: Risk of premature wear of the compressor bearings.  
 Tension too low: Risk of premature belt wear.  
 Replace the air filter (SNDC Ref 281G47).  
 Check that the water drain holes in the main casing and in the evaporator casing are not clogged up.

### **Every two years: (To be done by an A/C specialist)**

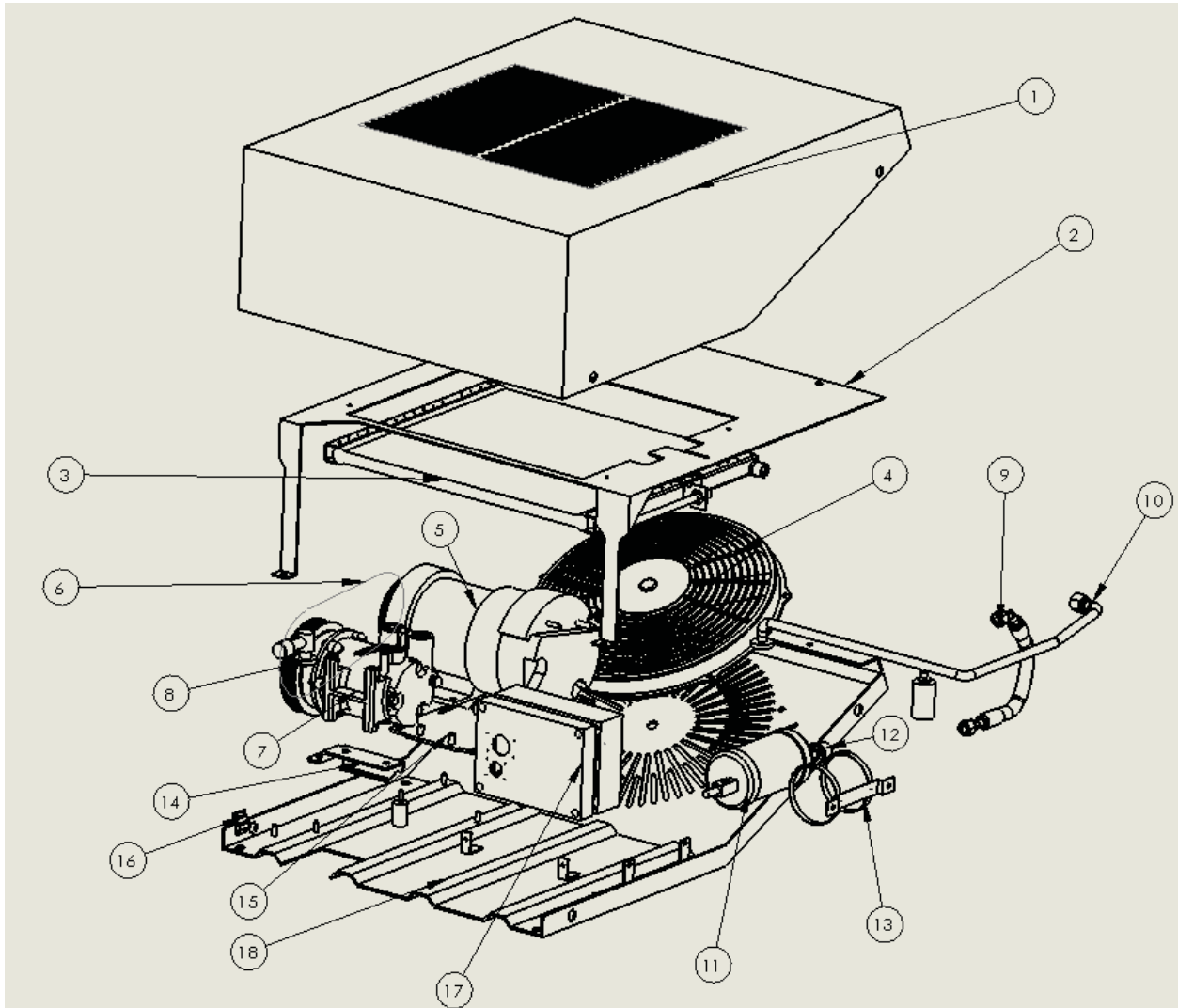
Clean the condenser and the evaporator coils. Clean the water drain holes in the main casing and in the evaporator casing.  
 Recover the A/C circuit gas and replace the receiver dryer (SNDC Ref 225A13).  
 Check the A/C circuit air tightness.  
 Recharge the circuit and check the thermostat and the pressure switch.  
 Check the oil level.

### **Every five years or 2000 hours: (To be done by an A/C specialist)**

Check and tighten all the screws and nuts.  
 Replace the motor-compressor belt.

## 17 EXPLODED VIEWS AND SPARE PARTS LIST

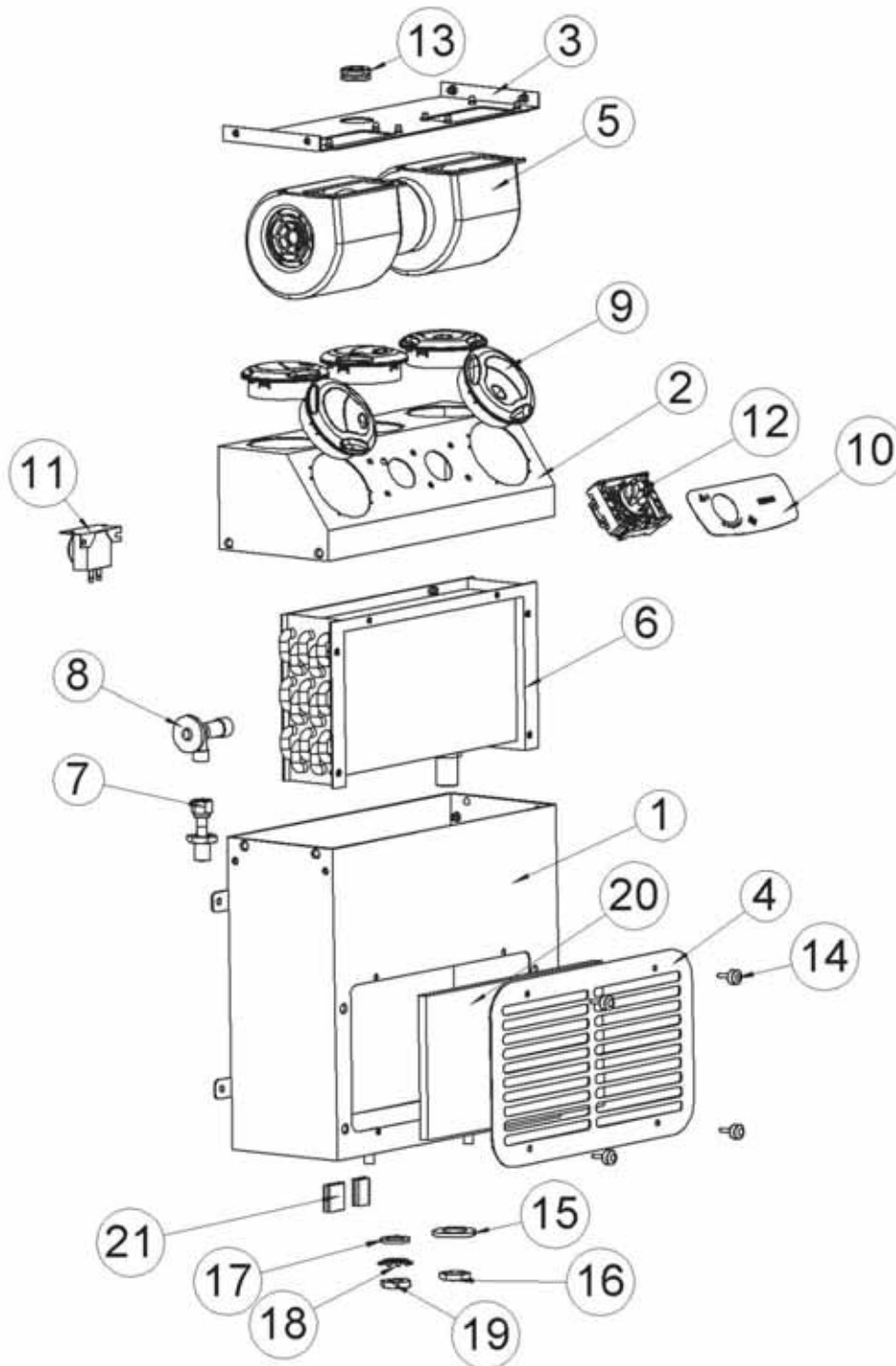
### - SKIMO SPLIT PLUS unit



Repère	Référence	Description	Qté
1	520C29	Unit cover	1
2	560C38	Condenser plate bracket	1
3	296A34	Condenser	1
4	260A23	Fan 24 Volts Ø330 mm blowing	1
5	540F78 + 560C35	Motor SKIMO 24V 1 KW + motor pulley	1
6	219B87	Belt 4PK0655	1
7	200H05	Compressor PV5	1
8	242C48	Original gas connection	1
9	235I42	M6 Cond/Deshy Hose	1
10	560C36	Rigid line M8 Comp/Cond SPLIT	1
11	225A13	Deshy Alfa 164	1
12	264A40	Binary pressure switch	1
13	226A13	Drying filter bracket	1
14	560C39	Compressor bracket	1
15	560C16	Motor bracket	1
16	273D14 + 273D15	Safety magnet	1
17	273B85 + 274C04	Electrical box + box electrical harness	1
18	560C37	Chassis	1
NR	274B71	SKIMO SPLIT PLUS Electrical harness	1



**- Vertical evaporator unit**



<i>Item</i>	<i>12 volts</i>	<i>24 volts</i>	<i>Description</i>	<i>Qty</i>
1	530C44	530C44	Casing	1
2	530C45	530C45	Plenum	1
3	530C47	530C47	Bracket blower	1
4	530C46	530C46	Air filter access grid	1
5	261A25	261A26	Blower	1
6	294C07	294C07	Evaporator	1
7	530C48	530C48	A/C pipe #6	1
8	250A16	250A16	Expansion valve	1
9	370C44+370B32	350C44+370B32	Adjustable air louvers	5
10	370D43	370D43	Control panel adhesive	1
11	265A37	265A37	Thermostat	1
12	370D44	370D44	Control panel	1
13	234A18	234A18	Grommet 35mm	1
14	690A47	690A47	Specific screw M4-15	1
15	650A07	650A07	Flat washer stainless M22	1
16	243A06	243A06	Nut A/C pipe #10	1
17	650A16	650A16	Flat washer stainless M16	1
18	640A17	640A17	Grower washer stainless M16	1
19	660A20	660A20	Nut A/C pipe #6	1
20	281G47	281G47	Air filter	1
21	274B70	274B70	Electrical harness	1

## 18 APPENDIX AND REVISIONS

### Révisions :

Version	Date	Objet
0	03/2014	Creation