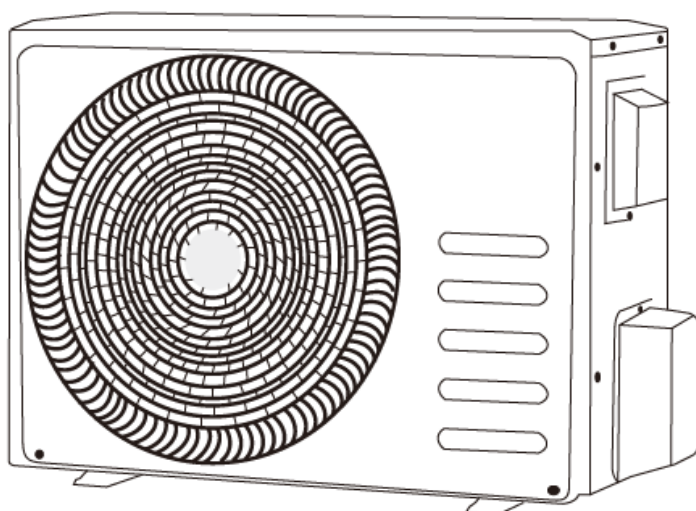




## SAFETY INFORMATION FOR MAINTENANCE AND REPAIR

AIR CONDITIONER / AIR/AIR HEAT PUMP

Ref. 409730	Type: SMVH09B-2A2A3NH
Ref. 409731	Type: SMVH12B-2A2A3NH
Ref. 409732	Type: SMVH18B-4A2A3NG
Ref. 409733	Type: SUV2-H18/3CFA-N+ SMVH09B-2A2A3NG+ SMVH12B-3A2A3NG



• Hotline gratuite sur ligne fixe

 **0805 03 43 04**



## R32 GAS SPECIFIC WARNINGS

Please read carefully follow these safety instructions.



- (1) Read the user manual (ISO 7000-0790)
- (2) User Manual; user instruction (ISO 700-1641)
- (3) Service indicator; read the technical manual (ISO 700-1659)

### WARNING :

- Do not use means to accelerate the defrosting process or to clean the air conditioner, other than those recommended by the manufacturer.
- The air conditioner should be stored in a room where there are no sources of ignition in continuous operation (for example: open flames, gas appliance in operation or electric heating appliance in operation).
- Do not pierce or burn.
- Be aware that refrigerants may not have an odor.

The refrigerant R32 used in this air conditioner is a slightly flammable, fluorinated gas that respects the environment and allows it to comply with European eco-design directives related to energy and the environment. Its effect on global warming is described in the product sheet at the end of this manual.

The charge for the outdoor unit + indoor unit air conditioner assembly contains:

Ref. 409730	520g
Ref. 409731	720g
Ref. 409732	950g
Ref. 409733	1144g

### Conditions of installation, use and storage:

- In order to avoid that, if the appliance is installed, used or stored in an unventilated room, the latter must be able to prevent the stagnation of possible leaks of refrigerant gas which could be ignited by a electric arc or any other source of ignition, and cause a fire or explosion.
- a location with no constant ignition sources (for example: open flames, running gas or electrical appliances).
- Keep and store the device vertically in a safe place to prevent falls and mechanical damage.

## Servicing, maintenance and repair:



**Please carefully read the safety instructions to be implemented in the case of maintenance and repair of the appliance described below/**

### Authorization of stakeholders:

- Anyone involved in work on or in a refrigerant circuit should hold a valid certificate issued by an industry-accredited rating authority authorizing them to handle refrigerants safely in accordance with the specifications of the refrigerant. assessment recognized by the industries in the sector.
- All work that may affect the safety of property and people must only be carried out by competent persons.

### Manufacturer's recommendation:

- Maintenance should only be performed as recommended by the equipment manufacturer.

Maintenance operations and repairs requiring the assistance of other specialists must be carried out under the supervision of the person specialized in the use of flammable refrigerant gases.



## **SAFETY INFORMATION FOR MAINTENANCE AND REPAIR**

### **1. Checking the working environment**

Before starting to work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimal. To repair the refrigeration system, the following instructions must be observed before carrying out any work on the system.

#### 1)General work area

All maintenance personnel and others working in the work area should be made aware of the nature of the work in progress. Work in confined spaces should be avoided. The area around the workspace should be divided. Ensure that conditions in the area have been made safe by controlling flammable materials.

#### 2)Verification of the presence of refrigerant

The area should be checked with an appropriate refrigerant detector before and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that leak detection equipment used is suitable for flammable refrigerants, i.e. non-sparking, properly sealed or intrinsically safe.

#### 3)Presence of fire extinguisher

If hot work is to be performed on refrigeration equipment or any associated parts, suitable fire extinguishing equipment must be available. Install a dry powder or CO<sub>2</sub> fire extinguisher near the loading area.

#### 4)No ignition source

No person carrying out work in connection with a refrigeration system involving the exposure of pipes containing or having contained flammable refrigerant shall use

sources of heat in such a way that it may result in a risk of fire or explosion. All possible ignition sources, including smoking, should be sufficiently removed from the location of installation, repair, removal and disposal, during which flammable refrigerant may possibly be released into the surrounding space. Before work begins, the area around the equipment should be inspected to ensure that there is no flammability hazard or risk of ignition. "No Smoking" signs must be posted.

#### 5)ventilated area

Make sure the area is outdoors or has adequate ventilation before working on the air conditioner or performing any hot work. Ventilation must be maintained for the duration of the work. Ventilation should safely disperse any released refrigerant and preferably expel it outward into the atmosphere.

## **2. Working procedure**

The work must be carried out according to a controlled procedure, so as to minimize the risk of the presence of flammable gases or vapors during the execution of the work.

## **3. Controls at refrigeration equipment**

When electrical components are replaced, they must be fit for purpose and to proper specification. The manufacturer's guidelines for maintenance and care should be followed at all times. If in doubt, consult the technical service of the manufacturer. The following controls must be applied to installations using flammable refrigerants:

- The volume of the refrigerant charge conforms to the size of the room in which the rooms containing the refrigerant are installed;
- ventilation machines and outlets work properly and are not obstructed;
- If an indirect refrigeration circuit is used, the secondary circuit must be checked for the presence of refrigerant;
- Marking on equipment continues to be visible and legible. Illegible marks and signs must be corrected;
- Refrigeration hoses or components are installed in a position where they are not likely to be exposed to a substance that could corrode components containing refrigerant, unless the components are constructed of materials that are inherently corrosion resistant or sufficiently protected to protect it.

## **4. Controls with electrical devices**

Repair and maintenance of electrical components should include initial safety checks and component inspection procedures. If there is a fault that could compromise safety, no power supply should be connected to the circuit until the problem has been satisfactorily resolved. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution must be used. This should be reported to the owner of the equipment so that all parties are informed. Initial security checks should include:

- that the capacitors are discharged: this must be done in a safe way to avoid any possibility of a spark;
- that there are no exposed electrical components and live wires when charging, recovering or purging the system;
- that there is continuity of the grounding.

## **5. Sealed component repairs**

1) During repairs to sealed components, all electrical supplies must be disconnected from the equipment prior to removal of sealed covers, etc. If it is absolutely

necessary to have a power supply for the equipment during maintenance, a permanent check must be carried out, then a leak detection system must be located at the most critical point to warn of a potentially dangerous situation.

- 2) Particular attention should be paid to the following points to ensure that work on electrical components does not modify the enclosure in such a way as to impair the level of protection. This includes damage to cables, excessive number of connections, terminals not conforming to original specifications, damage to seals, incorrect assembly of cable glands, etc.

Make sure the device is properly mounted.

Ensure that seals or sealing materials have not degraded such that they no longer serve to prevent the ingress of flammable atmospheres. Replacement parts must be in accordance with the manufacturer's specifications.

NOTE: The use of a silicone-based sealant may impair the effectiveness of some types of leak detection equipment. Intrinsically safe components do not need to be isolated before working on them.

## **6. Repair of intrinsically safe components**

Do not apply any permanent inductive or capacitive load to the circuit without ensuring that it will not exceed the allowable voltage and current for the equipment being used. Intrinsically safe components are the only types that can be worked on while living in a flammable atmosphere. The tester must have the correct rating. Replace components only with parts specified by the manufacturer. Other parts may cause ignition of refrigerant in the atmosphere through leakage.

## **7. Wiring**

Check that the wiring will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check should also take into account the effects of aging or continual vibration from sources such as compressors or fans.

## **8. Detection of flammable refrigerants**

Under no circumstances should potential ignition sources be used to search for or detect refrigerant leaks. A metal halide torch (or any detector using an open flame) should not be used.

## **9. Leak detection methods**

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors should be used to detect flammable refrigerants, but sensitivity may not be adequate or may require recalibration. (Detection equipment should be calibrated in a refrigerant-free area.) Make sure the detector is not a potential source of ignition and is suitable for the refrigerant being used. Leak detection equipment should be set to a percentage of the LFL of the refrigerant and should be calibrated with the refrigerant being used and the appropriate gas percentage (25% maximum) confirmed. Leak detection fluids can be used with most refrigerants, but the use of detergents containing chlorine should be avoided as chlorine can react with the refrigerant and corrode copper lines. If a leak is suspected, all open flames should be removed/ extinguished. If a refrigerant leak requiring brazing is detected, all refrigerant should be recovered from the system or isolated (using shut-off valves) in a part of the system away from the leak. Oxygen Free Nitrogen (OFN) must then be purged through the system before and during the brazing process.

## 10. Removal and evacuation

When entering the refrigerant circuit to make repairs - or for any other purpose - use standard procedures. However, it is important that best practices are followed as flammability is a consideration. The following procedure must be followed:

- remove the refrigerant;
- purge the circuit with inert gas;
- clear out;
- purge again with inert gas;
- open the circuit by cutting or soldering.

The refrigerant charge must be recovered into the correct recovery cylinders. The system must be "flushed" with an OFN to make the unit safe. This process may need to be repeated several times. Compressed air or oxygen should not be used for this task. Flushing should be accomplished by breaking the vacuum in the system with OFN and continuing to fill to working pressure, then releasing to atmosphere and finally pulling to vacuum. This process should be repeated until there is no more refrigerant in the system. When the last OFN charge is used, the system must be vented to atmospheric pressure to allow work to take place.

Make sure that the outlet of the vacuum pump is not near sources of ignition and that there is ventilation.

## 11. Charging Procedures

In addition to conventional charging procedures, the following requirements should be followed:

- Ensure that different refrigerants are not contaminated when using charging equipment. Hoses or lines should be as short as possible to minimize the amount of refrigerant they contain.
- Cylinders must be kept upright.
- Make sure the refrigeration system is grounded before charging it with refrigerant.
- Tag the system when charging is complete (if not already done).
- Extreme care must be taken not to overfill the refrigeration system.

Before recharging the system, it must be pressure tested with an OFN. The system should be leak tested upon completion of charging but prior to commissioning. A leak test must be carried out before leaving the site.

## 12. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is good practice to recover all refrigerants safely. Prior to the execution of the task, an oil and refrigerant sample should be taken in case analysis is required before reusing the recovered refrigerant. It is essential that the power supply is available before starting the task: a) Familiarize yourself with the equipment and its operation.

b) Isolate the system electrically.

c) Before attempting the procedure, ensure that:

- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and used correctly.
- The recovery process is supervised at all times by a competent person.
- Recovery equipment and cylinders conform to appropriate standards.

d) Pump the refrigerant system, if possible.

e) If vacuum is not possible, create a manifold so that refrigerant can be removed from different parts of the system.

- f) Make sure the cylinder is located on the scale before recovery.
- g) Start the recovery machine and operate in accordance with the manufacturer's instructions.
- h) Do not overfill cylinders (no more than 80% of liquid charge volume).
- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process is complete, ensure that the cylinders and equipment are removed from site promptly and that all equipment isolation valves are closed.
- k) Recovered refrigerant should only be charged to another refrigeration system if it has been cleaned and checked.

### **13. Decommissioning labeling**

Equipment should be tagged indicating that it has been taken out of service and emptied of refrigerant. The label must be dated and signed. Make sure the equipment has labels indicating that it contains flammable refrigerant.

### **14. Recovery**

When removing refrigerant from a system, whether for maintenance or decommissioning, it is recommended that all refrigerants be safely removed. When transferring refrigerant into cylinders, be sure to use only appropriate refrigerant recovery cylinders. Make sure the correct number of cylinders to hold the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for refrigerant recovery). Cylinders must be fitted with a pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery.

Recovery equipment should be in good working order, with a set of instructions regarding the equipment available and should be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated scales must be available and in good working order. Hoses should be complete with fittings disconnected without leaks and in good condition. Before using the recovery machine, ensure that it is in good working order, properly maintained and that all associated electrical components are sealed to prevent ignition in the event of the release of refrigerant. Consult the manufacturer if in doubt.

The recovered refrigerant must be returned to the refrigerant supplier in the appropriate recovery cylinder, and the corresponding waste transfer ticket must be in place. Do not mix refrigerants in recovery units and especially in cylinders. If compressors or their oils need to be disposed of, make sure they have been evacuated to an acceptable level to ensure that flammable refrigerant does not remain in the lubricant. The evacuation process must be carried out before returning the compressor to the suppliers. Only electric heating of the compressor body should be used to speed up this process. When oil is drained from a system, it must be done safely.