IMPORTANT NOTE:

All inquiries to our After-Sales Service Dept. should always include the machinery Model and Serial number!

1) TEST # 1 – CLIMATE CONTROL UNIT OPERATION

a) FOREWORD

i) **The thermostat is set at a temperature of 35°C** therefore, if the temperature inside the cabin is lower, the compressor and the outside fan do not start.

It might seem that the appliance "is not working" as the air circulated in the cabin is not cooled.

ii) **Setting the thermostat at 35°C** ensures correct operation of the conditioner and of the electronics in the control panel avoiding the formation of condensation; **it is** therefore **an essential operating parameter and guarantee clause**.

b) INITIAL CONDITIONS

i) Locate the thermostat according to the indications given in the instructions handbook.

ii) Make sure that the conditioner is powered at the nominal voltage rating.

iii) For climate control units with three-phase supply (Rotary Compressors), check that all the phases have been connected and are not inverted (see wiring diagram – K1 = Phase Sequence Control Relay). If the phases are inverted or one of them is not connected the climate control unit will be off. If the conditioner is fitted with a Display, it will be off.

iv) If the climate control unit is fitted with a "Doors Open Check" make sure that the door contact is connected.

If not, connect it, or alternatively, short circuit the relevant terminals of the outside terminal strip (X9-1 + X9-2). If the climate control unit is provided with cables for the power supply and signals, short circuit the 2 red wires of the 5-way multipolar cable (see wiring diagram – SQP = Door contact).

If the SQP contact is open (cabinet doors open), the climate control unit will be off. If the conditioner is fitted with a Display, it will be off.

After checking the above-mentioned points:

v) Make sure that the inside fan (Evaporating Battery Side) is turning with the appliance powered (air re-circulation inside the cabinet).

c) CONDITIONER OPERATING TEST

To carry out the test, the temperature on the thermostat should be lowered as described below:

i) Electromechanical thermostat:
   (a) Slacken the minimum temperature adjustment **stop screw** (only present on models manufactured before the year 2000), to allow the thermostat to reach the start of the scale.
   (b) Turn the adjustment screw counter-clockwise (using a screwdriver) until the compressor and outside fan start (cutting-in temperature).

ii) Electronic thermostat without display:
   (a) Turn the knob counter-clockwise up to the cutting-in temperature.

iii) Electronic thermostat with display:
   (a) Change the temperature through the display (check the procedure in the instructions handbook and/or on the 2nd face of the wiring diagram).

iv) The compressor and the outside fan (condensing battery side) turn on and after about 15 minutes warm air will come out of the cowling outlet vents (the Temperature of the "warm" air depends on the internal T in the cabin, the environment T. [outside the cab], the humidity and the state of cleanliness of the condensing battery).

After checking correct operation of the conditioner as described, return the internal check thermostat (electromechanical or electronic) to 35°C. If present, reposition the stop screw, only after restoring the 35°C setting, otherwise the thermostat will break.

d) CORRECT THERMOSTAT SETTING TEST

With the help of a digital thermometer with wire detector it is possible to check operation of the thermostat:

i) Positioning the detector of the digital thermometer in the cabinet near the conditioner fan the air temperature reading is the same as the one that involves the conditioner thermostat.
ii) Wait for 10 minutes before carrying out the operation.
iii) Slowly turning clockwise (from 0 to max) the thermostat screw for the electromechanical version and the knob for the electronic version (without display) the cutting-in point is reached; then check that the value given on the thermostat data plate (or on the knob) is the same as that of the digital instrument.

2) TEST # 2 – CLIMATE CONTROL UNIT COOLING CAPACITY

a) INITIAL CONDITIONS

i) Start the conditioner; if necessary follow the instructions of TEST # 1 "CLIMATE CONTROL UNIT OPERATION".
WARNING: THE TEST MUST BE CARRIED OUT WITH THE CABINET COMPLETELY CLOSED. No measurements are to be made inside the cabinet to be cooled.

ii) If the model is fitted with filters, make sure they are MKS originals and clean.

iii) Wait for at least 15 minutes before continuing with the test.

b) CONDITIONER COOLING CAPACITY TEST

i) **Measure** the environment temperature **'T_a'** at the condenser inlet vent – outside circuit (Wall model: lower part of the outside cowling / Roof model: slits on the short side of the cowling).

ii) **During the compressor operating cycle**, which starts coinciding with the condenser side fan (outside), **measure** the temperature of the air **'T_u'** on the condenser outlet vent (Wall model: upper part of the outside cowling / Roof model: slits on the roof or on the cowling long side). **'T_u' will be over 'T_a' ($T_u > T_a$)**.

iii) Complete the table below and send this page to our after-sales dept. that will promptly answer with a brief report on the conditioner capacity.

SERIAL NUMBER	MODEL	T_a [°C]	T_u [°C]	COMPANY / REFERENCE	E-MAIL

REPORT by MKS:

_____

_____

_____

The Technical Manager: _____

3) TEST # 3 – CLIMATE CONTROL UNIT SIZING

a) INITIAL CONDITIONS

i) This test should be carried out **AFTER AT LEAST 1 HOUR** of operation of the conditioner, fitted on the control panel, with minimum protection class IP 54, the cabinet doors CLOSED and the internal drives working.
It is also wise to choose or simulate the **Max Environment Temperature Conditions** of the place of final installation.

ii) If the model is fitted with filters, make sure they are MKS originals and clean.

b) CONDITIONER SIZING TEST

i) Check the thermostat setting (IT MUST BE 35°C).

ii) Place a thermometer in the warmest point of the cabinet, **for about an hour**, and **note the temperature.**

c) TEST RESULTS

i) If the temperature DOES NOT EXCEED 35°C / 40°C, the conditioner is sized correctly.

ii) If the temperature EXCEEDS 40°C the conditioner is UNDERSIZED (the power is insufficient). Therefore, a new sizing is necessary (use MKS's Internet site (www.mksclima.com) or ask for the "Cooling unit sizing" sheet).

iii) If the T remains around 35°C and MORE THAN 6 COMPRESSOR STARTS/HOUR ARE COUNTED, the conditioner is OVERSIZED and will have a lower operating life (this is inversely proportionate with the number of compressor starts). In this case, too, a new sizing is necessary.

4) TEST # 4 – CLIMATE CONTROL UNIT CONDENSATION DRAINING

a) FOREWORD

i) Make sure that the conditioner is fitted in a perfectly level position (the maximum tolerance is 2°).

ii) Condensation water is formed dehumidifying the air inside the cooled cabin, and it is a process that is not supplied without the admission of humid air from outside.

iii) In the presence of very humid air and a temperature inside the cabin at least 10°C below that of the environment, the cabinet walls generate condensation.

iv) Once the climate control unit has been operated for the first time and each time the cabinet is opened, the air inside is dehumidified and the condensation is drained to the outside where the compressor heat will evaporate it.

v) The air inside the cabin will therefore be dehumidified (waterless) until any new air is admitted from the environment.

vi) In the presence of a high percentage of humidity, use of the door contact is strongly recommended (the climate control unit must absolutely not work with the doors open, otherwise the evaporating battery will collect a high percentage of water from the environment and once the cabinet has been closed again, this water would be sprayed on the inside drives by the fan).

b) **GENERAL CHECKS**

If the conditioner continuously produces too much condensation, check the following:

i) **The cabin** must have a **minimum protection class of IP54**. In specific terms, there should be no openings, slits and/or holes of any nature, especially on the bottom of the cabinet.
There must be no forced or natural air re-circulation.

If point i) is met, proceed as follows:

ii) The conditioner must work with **the cabin doors closed**. If a “doors open” warning system exists, check that it is working properly.

If the cabin doors are open, stop the conditioner.

iii) **The thermostat** of the conditioner must **NOT** be **SET BELOW 35°C**. If so, restore the factory setting (according to the instructions for use).

c) ROOF CONDITIONERS

i) The condensation drain pipe:

(a) Must never be positioned (in any section of its routing), higher than the conditioner outlet fitting.

(b) It must be free at the ends.

(c) It must be above the level of the water.

(d) It must never be laid on the cabin roof, which is made concave by the weight of the conditioner. Outside condensation and the presence of any fluids would stagnate and end up penetrating inside the cabinet.

(e) If necessary, reinforce the cabin roof and make sure it is watertight.

If these operations fail to reduce the production of condensation, contact our after-sales service dept.

d) DAMAGE TO THE COMPRESSOR

i) The thermostat set to a temperature below 35° C could cause excessive cooling of the compressor causing:

(a) The formation of a film of condensation on its surface. This condensation might penetrate into the electric parts of the compressor and cause a short circuit.

(b) The return of liquid gas to the compressor and its consequent mechanical deterioration.

5) TEST # 5 – GAS RECHARGING
To be carried out by Specialised Personnel only

a) OPERATIONS TO BE CARRIED OUT FOR GAS RECHARGING

(1) Create a vacuum in the cooling circuit until reaching a pressure of 9 Pa, using the two compressor valve connections (the delivery one could be engaged by the pressure switch, in which case, remove it). [1 Pascal (Pa) = 1 x 10^{-5} Bar].

(2) Stop the vacuum pump and let the pressure stabilise for 10 seconds, if within this time the pressure exceeds 110 Pa, it means that there are leaks.
Conversely, if it remains below this value continue with point No. (6).

(3) Look for the leak filling the circuit with nitrogen at 20 bar.

(4) Check all the welds brushing them with soap and water.

(5) Repeat the cycle after repairing the leak.

(6) Charge on the inlet valve (disconnect the delivery fitting) with the type and quantity of gas stated on the conditioner data plate. If the data plate is no longer legible, please get in touch with us to ask for the data needed to carry out this operation.

(7) Remember to retighten the valve protection caps.