

USE AND INSTALLATION MANUAL **IDRA**

Heat pump water condenser air
conditioning system

MONO split

ISKV-12 C6/H6
ISKV-18 C6/H6
ISKV-24 C6/H6
ISKUOV-36 CT6/HT6

MULTI split

ISKOV2-18 C6/H6
ISKOV3-24 C6/H6
ISKOV4-28 C6/H6



CE DECLARATION OF CONFORMITY

Description

CONDENSING UNIT DC INVERTER WATER TO AIR

Model

ISKV-12 C6/H6	ISKOV2-18 C6/H6
ISKV-18 C6/H6	ISKOV3-24 C6/H6
ISKV-24 C6/H6	ISKOV4-28 C6/H6
ISKUOV-36 CT6/HT6	

Is in compliance with the follow ECC directives, latest modification included, and the relevant nationale granting regulations in force:

2004/108/CE

2006/95/CE

2003/108/CE

2011/65/CE

2012/2016/CE

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1. GENERAL INFORMATION

1.1 SYMBOLS

In this publication and/or on this unit the following symbols have been used:



USER: In this publication and/or on this unit the following symbols have been used:



INSTALLER: Information, paragraph or chapter of manual that concerns the installer.



TECHNICAL ASSISTANCE CENTRE: Information, paragraph, chapter of the manual that concerns the technical assistance centre.



IMPORTANT: Calls attention to technical information or practical advice which makes using the unit efficient and economical.



COMPULSORY: Calls attention to mandatory actions in order to obtain correct machine



WARNING: Calls attention to actions that, if not correctly performed, may cause serious injury.



PROHIBITION: Calls attention to actions that impose a ban.



VOLTAGE WARNING: Calls attention to actions that, if not carried out correctly, can cause serious injury or death to exposed persons.



DANGER HIGH TEMPERATURES: Calls attention to actions that, if not correctly performed, may cause serious personal injury caused by the high temperature of the components.

1.2 PERMITTED USE

These machines have been created to heat or cool the air. Use of the units for applications other than those specifically authorised by the manufacturer is considered inappropriate and, therefore, not allowed. The company declines all contractual and extra-contractual responsibility for damage caused to people, animals and objects resulting from errors in installation, calibration and maintenance, improper use, or from the partial or superficial reading of the information contained in this manual. In addition, keeping in mind the continued product improvement, T.P.I. reserves the right to change the information found in this manual at any moment without notice, and declines all responsibility for any inaccuracies in this manual, if due to errors in printing or copying.

Carefully read this booklet; all operations must be carried out by expert and qualified personnel who are familiar with the related laws in force in the different countries concerned.

The guarantee is invalidated if they do not meet the above mentioned directions.

The documentation supplied with the unit must be delivered to the end customer (user) who should keep it carefully for future maintenance or service.

Upon delivery of the goods by the carrier, check the integrity of the packaging is that the units. Should you find any damage or lack of components, indicate this on the delivery note to the unit's receipt: please make an all-party control, in order to verify that the transport did not cause damage, the damage may be present must be communicated to the carrier, adding the clause reserves on the transport document, specifying the type of damage, also inform, by fax or registered mail within 8 days from the date of receipt of goods, a formal complaint to the company.

1.3 OSSERVAZIONI

Conserve the manual in a dry place, to avoid deterioration, for at least 10 years for future reference. Completely and carefully read all the information contained in this manual. Pay particular attention to the any rules accompanied by the words «**DANGER**», «**PROHIBITED**» «**MANDATORY**» in that, if not followed, may cause damage to the machine and/or people and objects. For potential problems not considered in this manual, promptly consult T.P.I.'S service assistance centre. The manufacturer declines all responsibility for damage due to improper machine use or the partial or superficial reading of the information contained in this manual.

The machine must be installed in such a way that makes maintenance and/or repair operations possible.

In any case, the guarantee does not cover, costs due to ladders, scaffolding or other systems of elevation which may be necessary for carrying out repairs under guarantee.

The manufacturer does not issue drawings or specifications relative to connection systems.

Any deviation from the requirements contained in the following manual must be validated in writing by the manufacturer's technical assistance department

1.4 FUNDAMENTAL SAFETY RULES



Recall that the use of products using electricity and water, involves the observance of some fundamental safety rules such as:

The use by children and unassisted disabled persons.

Do not touch the appliance when barefoot or with wet or damp parts of the body.

It does not carry out cleaning operations without first disconnecting the electric power supply by moving the main system switch to "off."

It is forbidden to modify the safety or adjustment devices without authorization and instructions from the manufacturer.

Do not pull, detach or twist the electrical cables coming from, even when disconnected from the power network.

Do not open the doors of access to internal components, if it is not switched off the system using the main switch.

You do not climb on the appliance with walking, sitting and / or rest any type of object.

Do not spray or pour water directly on the unit.

You not dispose of, abandon or leave within reach of children packaging materials (cardboard, staples, plastic bags, etc.) As it can be potentially dangerous.



Respect safety distances between the unit and other equipment or structures to ensure sufficient drive access space for maintenance and / or service as described in this handbook (see chapter Technical spaces).



Power unit: must be done with electric cables of adequate section for the power of the unit and the power supply voltage values must match those indicated on the respective machines; All units must be earthed in compliance with current legislation in the different countries.



hydraulic coupling must be performed as instructed to ensure proper operating condition. If during the winter period the unit is not in operation it is necessary to empty the water circuit.



Handle the unit with care avoiding to turn it over and overlay parcels that could damage it.



Tampering, removal, deterioration of identification plates, makes difficult any installation, maintenance and ordering spare parts.

1.5 RECEIPT OF THE PRODUCT AND HANDLING

This equipment is supplied on a wooden pallet protected by cardboard packaging. A kit is also provided:

- Manual Installation, use and maintenance of comprehensive warranty and the EC declaration

- Anti-vibration feet, water filter, gas fittings for indoor unit (in models where necessary).

- Documentation ventilating unit (inside their packaging).

- Connection diagram (adhesive label on the inside of the inspection panel).



The Owner's Manual is an integral part of the equipment; it is recommended to read and kept with care.

Unpack only with equipment placed in the installation position. After removing the packaging, handling should be carried out by qualified personnel and equipped with adequate facilities to the weight of the structure. The manipulation of the condensing unit is only permitted in the vertical position maintained equipment.



To disperse the parts of the package, or leave them within reach of children as they are potential sources of danger. Packaging must be disposed according to local legislation.



Check upon receipt that there are no transport damage and / or handling, and that in the package are present all desired accessories.



2. DESCRIPTION IDRA UNIT

2.1 BEFORE INSTALLING

Before installing the unit, carefully read and store the user manual and manufacturer's general conditions listed below.

1. Make sure that the unit corresponds with the needs of the system.
2. Make sure that the cooling water flow is sufficient for the proper functioning of the system.
3. Make sure that refrigeration and hydraulic piping is correct according to the manufacturer's requirements.
4. Assemble the water filter provided to protect the plate exchanger (water inlet).
5. If impurities are present in the water, perform periodic filter maintenance.
6. Make sure the electrical connection terminals are powered by the correct voltage (see unit's identification plate). An incorrect voltage will irreparably jeopardise the main components of the unit.
7. If alarms are activated, consult the user manual or contact the manufacturer's service assistance centre.
8. Do not force, for any reason, the operation of the unit, or tamper or alter the safety devices inside it.

9. Start up cannot be carried out with incomplete, provisional systems or carried out in a precarious manner.

10. The connections to the unit (hydraulic and electric) must be carried out by skilled, competent personnel and must meet all safety standards and health regulations currently in force in the country in which the unit is used.

11. The technical documentation (diagrams and manuals) must be kept in good condition in an easily accessible place for quick reference when needed.

12. The unit should not be used for purposes that do not correspond with the uses for which it was built.

13. Respect the technical spaces indicated in this manual to ensure good access to the unit during maintenance.

14. If damage occurs to the unit caused by the failure to comply with the above-mentioned points or the information contained in this manual, the manufacturer reserves the right to partially or completely void the guarantee.

15. Contact the manufacturer's Technical Assistance Centre for further explanation or clarification regarding the above information.

3. INSTALLATION

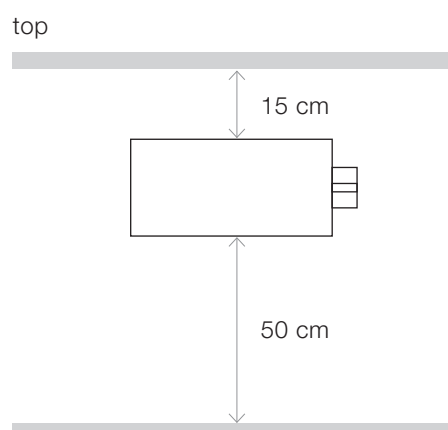
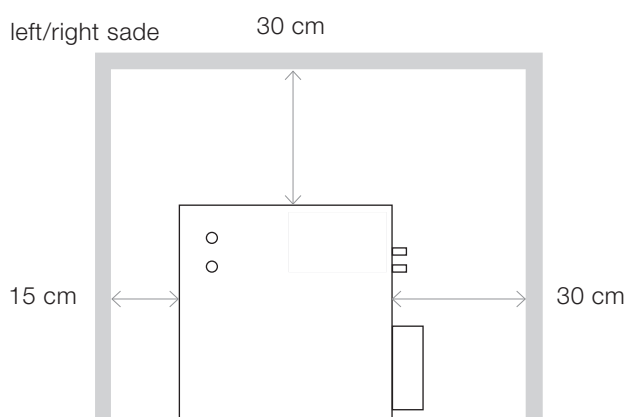
3.1 PLACE OF INSTALLATION

The installation location should be agreed with the customer, paying attention to the following points:

- The equipment should be placed in a technical room of adequate size and in accordance with applicable regulations in the countries where it will be installed.
- The condensing unit must not be installed outdoors.
- The plan on which will be supported to be able to support the weight, the rubber feet that is attached to the machine **SHOULD NOT BE REMOVED** except in case of use of anti-vibration spring for installations with wall bracket.

- The front panel must be inspected, so the front space should be adequate to permit the operator with all the steps required during installation, maintenance and assistance (controls, adjustments, refrigerant charge).
- In case of multiple installations (2 or more IDRA) **DO NOT STACK** the condensing units.
- The installation must allow authorized personnel to intervene in case of maintenance, in an easy manner which respects both the safety distances between the unit and other equipment that the technical areas mentioned below:

MINIMUM DISTANCES



3.2 HYDRAULIC AND REFRIGERATION CIRCUITS

The installer is responsible for the correct selection and application of components according to current national standards and as recommended below.

3.3 HYDRAULIC COMPONENTS

The hydraulic connections are made on the fittings located on the right side of machine.

The hydraulic connections are distinguished by labels that indicate the flow: WATER INLET AND OUTLET. Provide and interception tap on the water inlet, use piping with an internal diameter that corresponds to the diameter of the condensing

unit's fittings because otherwise operation problems may result (the guarantees voided if improper piping is used).

warning: always mount the inspection filter on the water inlet and ensure the correct positioning of the filtering unit respect minimum diameters required on the unit, check the water supply flow.

3.4 REFRIGERATION CONNECTIONS

The refrigeration connections are made on the fittings located on the right side of the unit. The connections on

the refrigeration lines are "flare" connections.

3.5 ELECTRICAL CONNECTIONS

1. Installation must be carried out in accordance with national regulations.
2. Only a nominal voltage supply cable and an exclusive circuit for conditioners can be used.
3. Do not pull the power cord by force.
4. Installation of the electrical cabinet must be carried out by qualified personnel and instructed in accordance with current regulations.

5. The diameter of the power cord must be dimensioned according to the needs of the machine and replaced once deteriorated.
6. Grounding must be reliable and the special cable must be connected to a dedicated device. It must also be equipped with a magnetotherm coupled to a differential switch with sufficient capacitance and both magnetic and thermal protections in the event of short circuit or overload.

Model	Alimentation	Circuit breaker	Cables (parts×section)
ISKOV2-18	230V~50Hz	16A	3×1.5mm ²
ISKOV3-24	230V~50Hz	25A	3×2.5mm ²
ISKOV4-28			

NOTE:

1. The magnetothermic and power supply specifications have been calculated on the basis of maximum absorption.
2. The power cable specifications are applied to a conduit containing more copper cables tested at 40 ° C and resistant to up to 90 ° C (see IEC60364-5-562). If the working conditions change, the cables must be changed according

to the applicable National Standards.

3. The magnetothermic specifications have been calculated based on a working temperature of 40 ° C. If the working conditions change, the cables must be changed according to the applicable National Standards.

3.6 REQUIREMENTS OF GROUND

1. The air conditioner is classified as a Class 1 ° appliance, grounding must be reliable.
2. The yellow-green cable is earthed and can not be used for other purposes, fix the cable with self-tapping screws, otherwise it may cause electric shock.

3. The grounding cable must be connected to that of the building and the cable can not be connected to any of the following locations:
 - (1) water tubes
 - (2) gas pipes
 - (3) drain hoses
 - (4) other places that the technical staff find untrustworthy.

3.7 CONNECTIONS BETWEEN THE EVAPORATOR AND CONDENSING UNITS

The indoor unit must be connected to the condensing unit via Flare connections with a refrigerator quality copper pipe at the ends of flare nuts and insulated along the entire length. It is absolutely necessary to respect the diameters provided on IDRA INVERTER units otherwise the guarantee

will be voided. If evaporator units with refrigeration fittings different than those on the IDRA INVERTER units are used, use dedicated reduction connections (attention: mount these fittings on the evaporator unit).

3.8 PIPE PREPARATION

Use only refrigeration quality copper pipes with a suitable diameter for each model. The gas and liquid pipes must absolutely be insulated with insulation that has a minimum thickness of 6 mm.

Insert the flare nuts on the pipe ends before preparing them with a countersink tool. The pipes, separately insulated with the relative fittings can later be bound to the condensing unit's evacuation pipe and the electrical cables using clamps.

3.9 PIPE ROUTE

The radius of curvature of the pipes must be equal or greater than three and a half times the diameter of the pipe axis. Do not bend the pipes more than 3 times consecutively and not make more than 10 curves on the total length of the

connection. If there is more than a 5m difference between the evaporator unit and condensing unit, a siphon must be placed at every 3 m. The siphon must have a radius of curvature that is as narrow as possible.

3.10 AIR EXTRACTION IN REFRIGERATION AND EVAPORATOR PIPES

The R410A load is only contained in the condensing unit. The inner unit contains a small quantity of neutral gas. Therefore, after having made the connections, it is necessary

to extract the air contained in these connections and in the inner units.



WARNING: IT IS NECESSARY TO USE A COUNTER KEY TO TIGHTEN THE VALVES

3.11 ASSEMBLY PROCEDURE

The IDRA INVERTER condensing unit MUST BE INSTALLED in an accessible place that allows for safe technical interventions; if this is not the case, the Technical Assistance Centre may refuse intervention.

THE IDRA INVERTER CONDENSING UNIT MUST NOT BE INSTALLED OUTDOORS BECAUSE DURING WINTER MONTHS ITS HYDRAULIC CIRCUIT MAY BE DAMAGED ALWAYS PUT AN INSPECTABLE FILTER ON THE WATER INLET (500 micron mesh).

- Connect the connection pipes to the condensing unit and the internal unit.

- Connect the vacuum pump to the fitting (suction), start it up, and make sure that the indicator pointer goes down to 0.1 Mpa (-760 mm Hg). Before disconnecting the vacuum pump ensure the vacuum indicator is stable for >15 minutes.
- Close the service valve and disconnect the vacuum pump.
- Remove the caps from the "GAS" and "LIQUID" valves and open them with a hexagonal key to release the R410a contained in the IDRA INVERTER, then put the caps back on.
- Check that the connections are sealed properly. To do this use an electronic leak detector or a spray solution for leak detection.

3.12 ADJUSTING THE REFRIGERANT LOAD

Depending on the connection length of each route, it may be necessary to top up the R410A load (the condensing units are pre-filled with a line of 5 metres). This operation must be carried out by a qualified person who is an expert in refrigeration. The complete load is introduced via the service

valve or via the condensing unit's Flare (large fitting). If the refrigerant line is less than 5 m "discharge" the quantity of excess refrigerant. All operations involving refrigeration circuits require observing recommendation regarding the disposal of R410A (according to local laws in force).

3.13 ELECTRICAL CONNECTIONS



A PROPER AND EFFECTIVE EARTHING CONNECTION IS MANDATORY

the manufacturer is not responsible for damages caused by inappropriate or insufficient connections.

Electrical connections must be made respecting the following:

- Use cables which are compliant with the laws in force in the different countries.
- Follow the order of connection for the phase, neutral and earthed conductors.
- Install a suitable protection and electric energy sectioning device with a delayed curve, a contact opening of at least three millimetres and an adequate interruption and

differential protection power

- If the unit powering is three-phase, make sure to follow the exact sequence of the phases.
- The supply voltage of the condensing unit must have a value between $\pm 10\%$ of the value indicated on the manufacturing data plate. If this is not followed, contact the local supplier of electric power.
- In the case of three-phase power, the imbalance between the three phases should not exceed 3%.

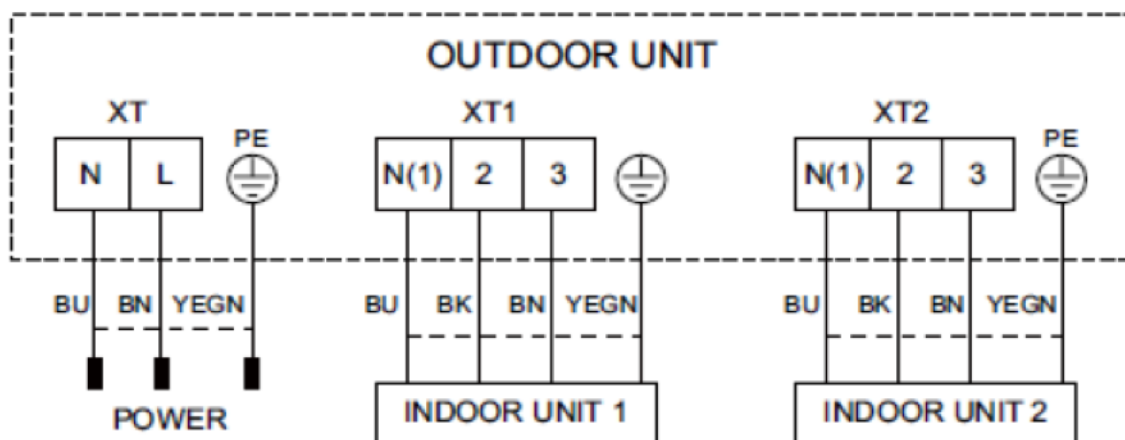
- Putting electrical connection cables inside the condensing unit in any part not approved by the manufacturer is prohibited.
- The power cable must be passed through one the holes with a rubber fairlead located on the left side of the machine.
- The electrical connections are made on the terminal board located inside the components and electrical compartment on the rear of the inspection panel.

- Connect the cable to the terminals inside the electrical panel.
- Absolutely avoid direct contact with metal parts.
- Make sure, after the condensing unit has been operating for about 10 minutes that the screws on the power terminal are closed.

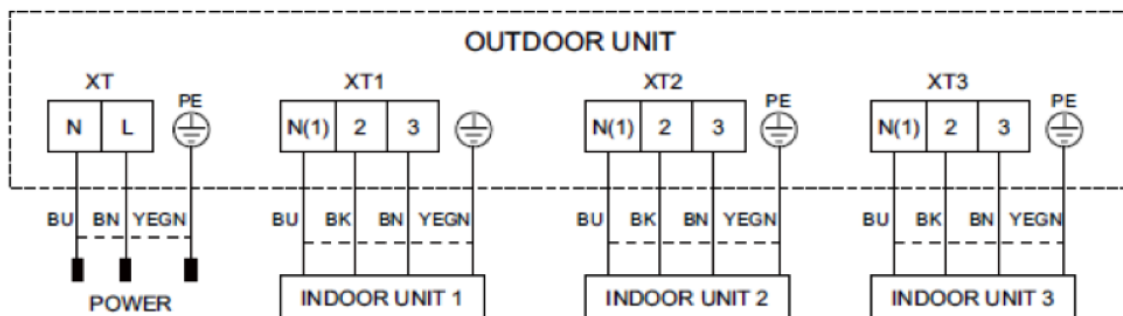
3.14 WIRING DIAGRAM

⚠ WARNING: All IDRA multi models are matched to internal units of the series: SKIV / DBIS / CASK

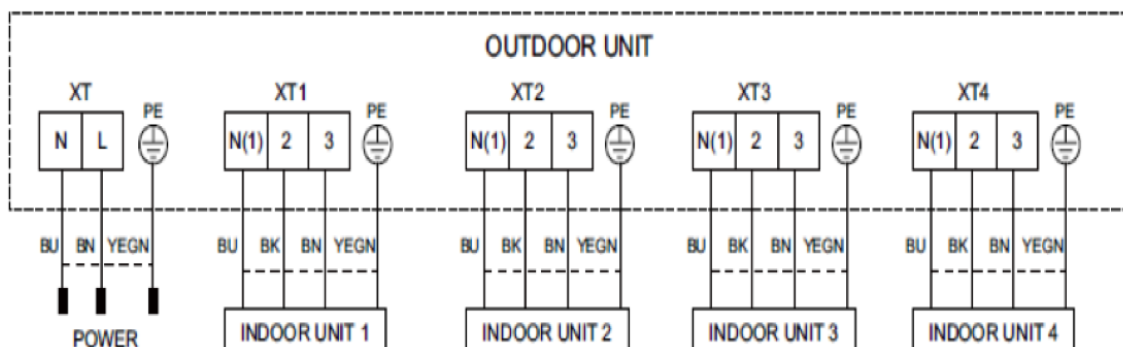
ISKOV2-18C/H6



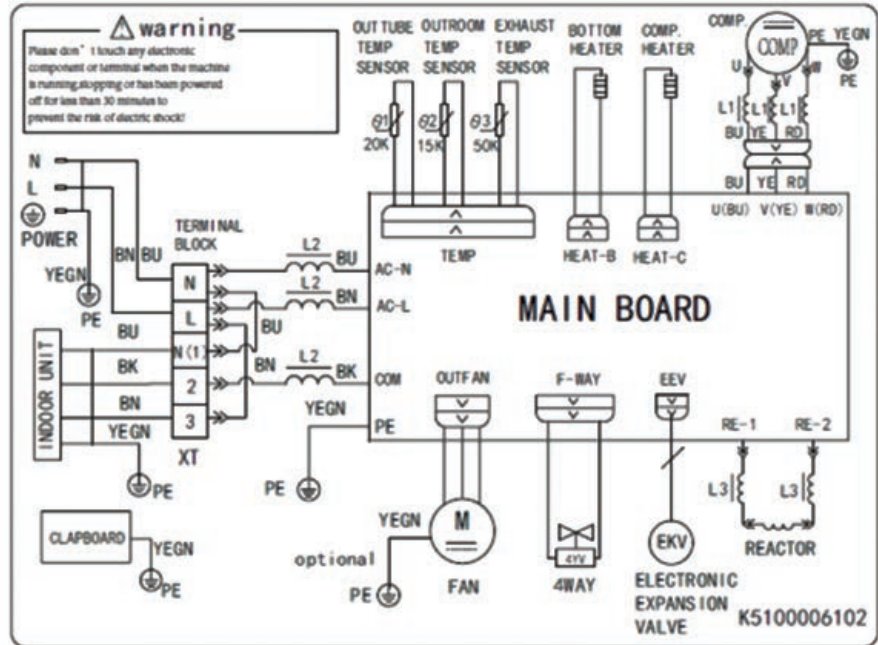
ISKOV3-24C/H6



ISKOV4-28C/H6



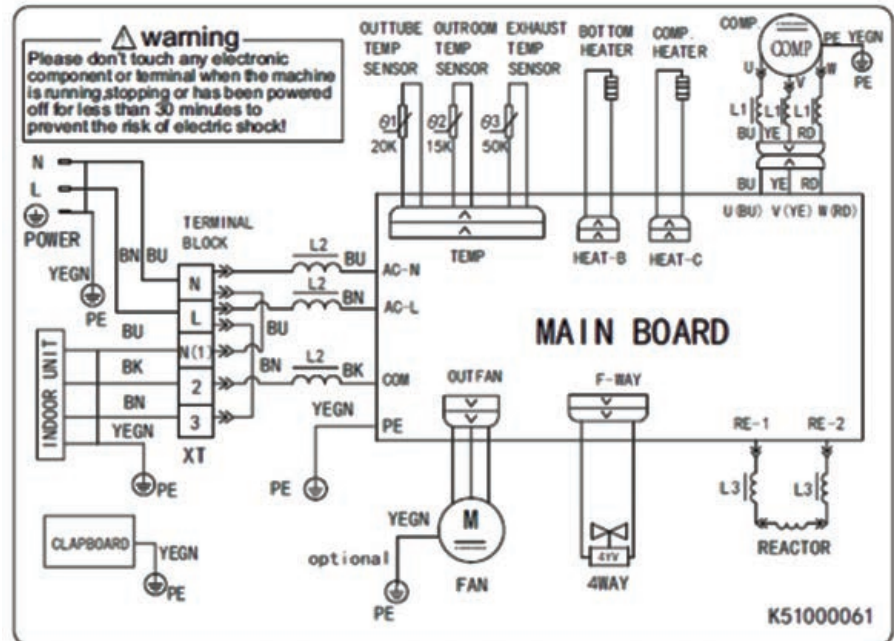
ISKV-12C6/H6



ISKV-18C6/H6

ISKV-24C6/H6

ISKUOV-36CT6/HT6



3.15 REFRIGERANT PIPING CONNECTION

The main cause of refrigerant leaks is due to a defect in the cartridge. Make the flared ends in the correct way, following the following guidelines:

Cut the pipes and the cable.

1. Use the piping kit accessory or pipes purchased locally
2. Measure the distance between the indoor and outdoor unit
3. Cut the pipes a little stronger than the measured distance
4. Cut the cable 1.5m longer than the pipe length

Flaring work

Firmly hold copper pipe in a die in the dimension shown in the table below

Putting nut on

Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal, (Not possible to put them on after flaring work).

Burr removal

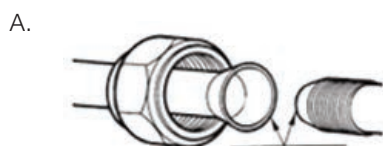
1. Completely remove all burrs from the cut cross section of pipe/tube
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing

Attaching the refrigerator connection (A.)

1. Align tubes.
2. Tighten the nut securely with the aid of two keys

Tightening Connection (B.)

1. Align the center of the pipes
2. Sufficiently tighten the flare nut with fingers, and then tighten it



B.

Pipe diameter [mm]	tightening torque [Nm]
6,35	15 - 18
9,52	31 - 35
12,70	50 - 55
15,88	60 - 65
19,05	70 - 75

C.

diameter E. [mm]	A [mm]	
	Max	Min
Ø 6,35	1,3	0,7
Ø 9,36	1,6	1
Ø 12	1,8	1
Ø 16	2	1

3.16 END OF INSTALLATION CHECKS

A few simple checks ensure correct system operation:

- Check the electrical connections.
- In multi-split models perform testing before evaporating with one on and then the next (this will highlight any incorrect connections to the ventilation units)

- Ensure the proper flow of water into the drain used
- Check the operating pressure (high pressure) by means of the manifold to verify the correct operation of the pressure valve

3.17 STARTING THE CONDENSING UNIT

Before powering the unit make sure that:

- It is firmly positioned on the support surface (if mounted on brackets secured with anti-vibration rubber stoppers both on the unit's base and on the bracket).
- The electrical connections, including earthing, have been completed according to the laws in force in the country concerned.

- The refrigeration line is sealed (check all connections made).
- The hydraulic system is sealed.
- The voltage is within the allowable limits ($\pm 10\%$).
- The interception taps of the refrigeration circuit are open.
- The hydraulic circuit interception tap is open.
- The probe cable (included) is inserted into the connector located near the ventilation unit's power terminal.

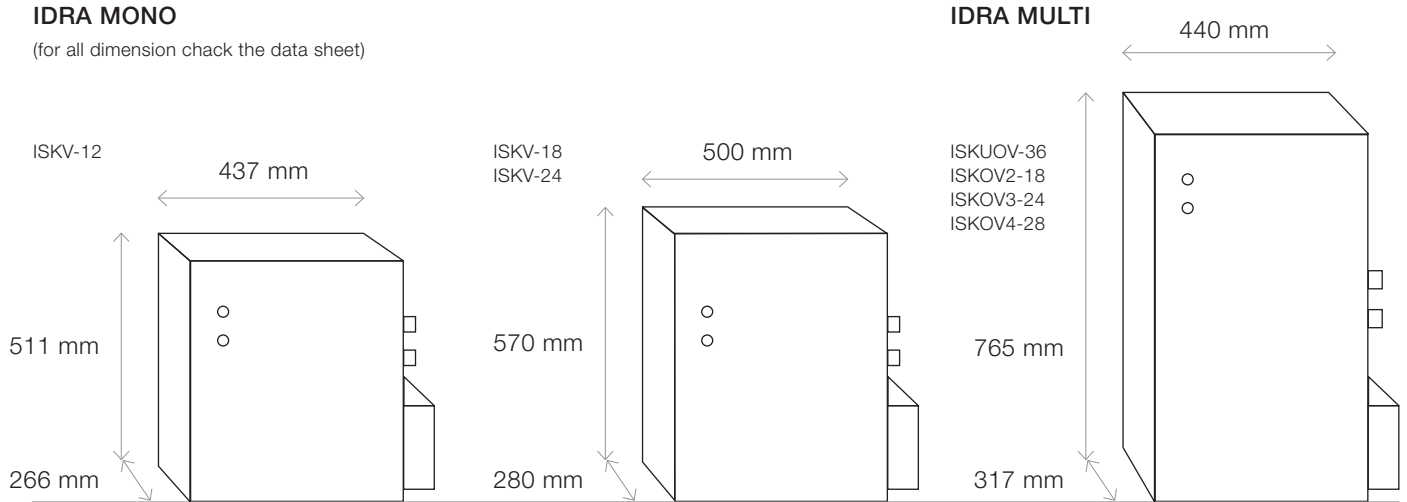
3.18 DIMENSIONS

1. The outdoor unit with 18 BTU / h capacity can carry up to two indoor units, the 24 BTU / h outdoor unit can carry three indoor units, while the outdoor unit with 28 BTU / h four internal units.

2. The sum of internal unit capacities should be between 50% and 150% of the power of the outdoor unit.

IDRA MONO

(for all dimension check the data sheet)



3.19 LENGTHS AND HIGHLIGHTS OF REFRIGERATING CONNECTIONS

	Permissible length			Refrigerator connections		
	18	24	28	18	24	28
Total length [m]	30	60	70	L1+L2	L1+L2+L3	L1+L2+L3+L4
Max total length per unit [m]	15	20	20	LX		
Maximum installation height OU/IU	5	10	10	H1		
Maximum installation height OU/IU	5	5	5	H2		

3.20 DIMENSION COOLING PIPE OF INDOOR UNIT

Indoor unit capacity [BTU/h]	Gas Pipe [mm]	Liquid pipe [mm]
07 / 09 / 12	Ø 9.5 (3/8")	Ø 6.35 (1/4")
18	Ø 12.7 (1/2")	Ø 6.35 (1/4")
24 / 28	Ø 15.9 (5/8")	Ø 9.52 (3/8")

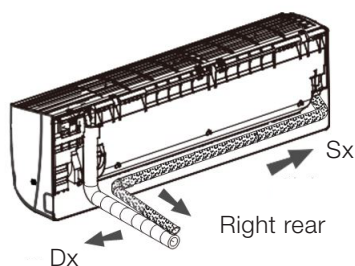
3.21 MIN WATER PRESSURE

Model	Minimun water pressure [bar]
ISKV-12C6/H6	1
ISKV-18C6/H6	1
ISKV-24C6/H6	1
ISKUOV-36C/HT6	1,5
ISKOV2-18	1
ISKOV3-24	1/1,5
ISKOV4-28	1,5

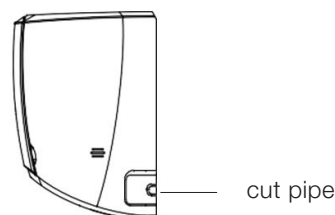
4. INSTALLATION INDOOR UNIT

4.1 DRAINEG PIPE

1. The tube can be taken out in the direction right, rear left or right.



2. Once you have decided to bring out the right pipe or the left and cut the corresponding hole on the body.



4.2 CONNECTION PIPES

1. Point the tube fitting to the corresponding bell.

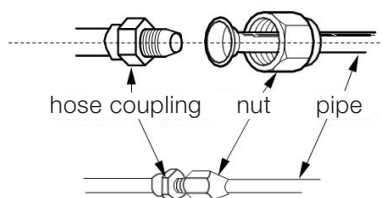
2. Pre-tighten the nut by hand

3. Adjust the strength of the couple according to the following

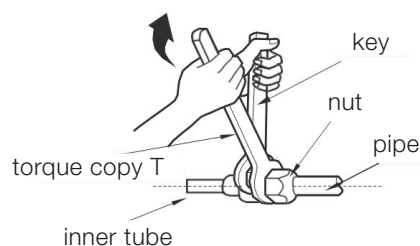
chart. Place the open-ended wrench on the coupling of the tube and insert the nut. Tighten the nut with a wrench.

4. Wrap the inner pipe and the coupling connection with the insulating tube and then wrap the whole with adhesive tape.

1. 2.



3.



Ø hex nut	torsion strength [Nm]
Ø 6	15 - 20
Ø 9,52	30 - 40
Ø 12	45 - 55
Ø 16	60 - 65
Ø 19	70 - 75

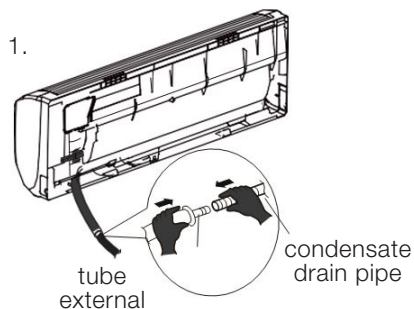
4.3 INSTALLING THE DRAIN PIPE

1. Connect the exhaust pipe with the outgoing pipe from the indoor unit.

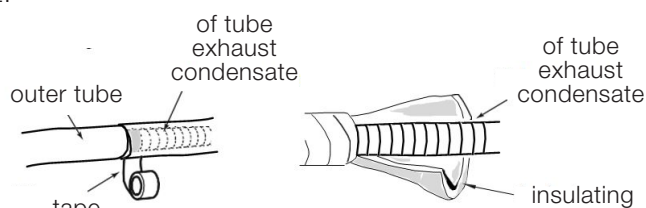
- Wrap with insulating tube inside the exhaust pipe in order to prevent condensation.

2. Secure the joint with a ribbon.

- The expansion plastics particles are not provided.



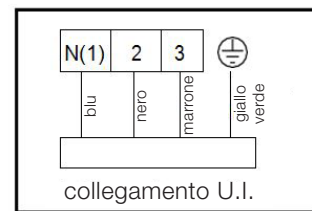
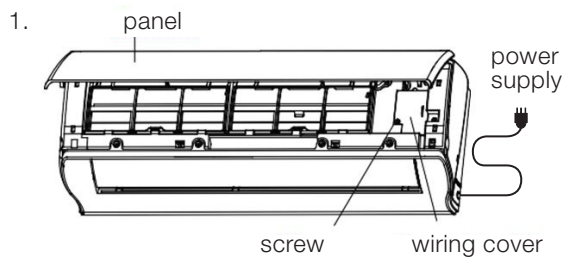
2.



4.4 ELECTRICAL CONNECTIONS

1. Open the panel, remove the screw on the cable cover.
2. Thread the power cable on the hole at the back Inner Unity, and then pull it out from the front.
3. Remove the cable clip, connect the power cord to the terminal respecting the color; tighten the screw and then secure the cable with the clip.
4. Place the back cover of the cables and secure it by tightening the screw.

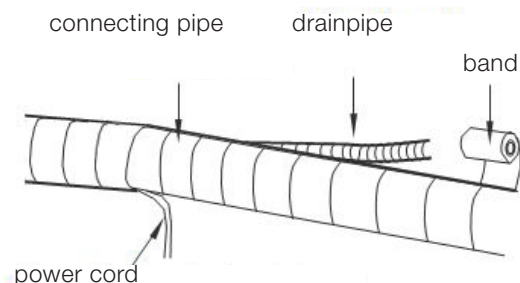
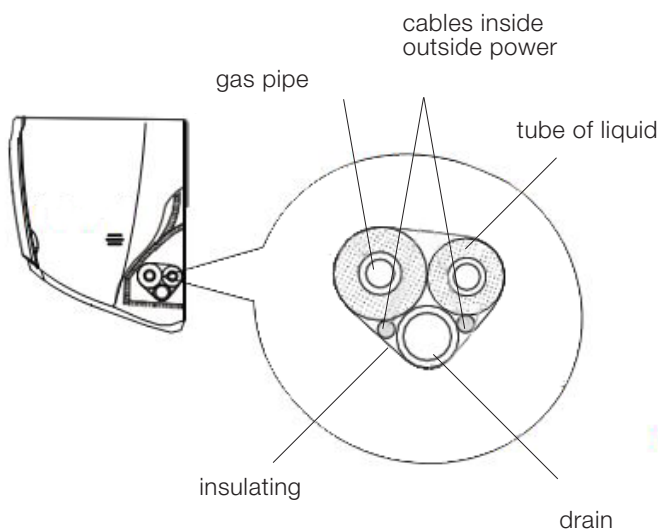
5. Close the panel.
 - All connections between Indoor and Outdoor Unit should be carried out by qualified personnel.
 - If the power cord is not long enough, contact the vendor and request a new one.
 - For air conditioners with power via plug, the plug must be attached after installation.



4.5 COVER TUBES

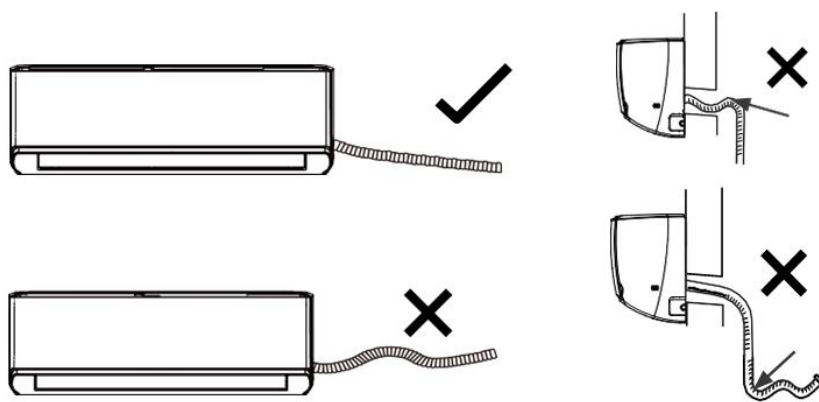
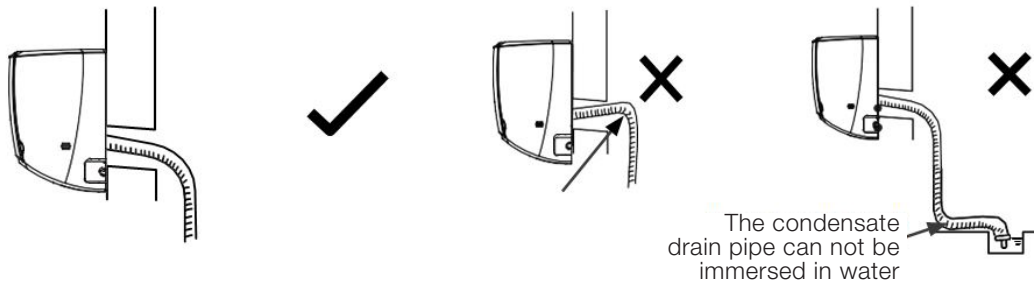
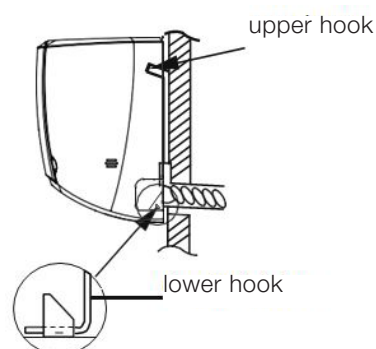
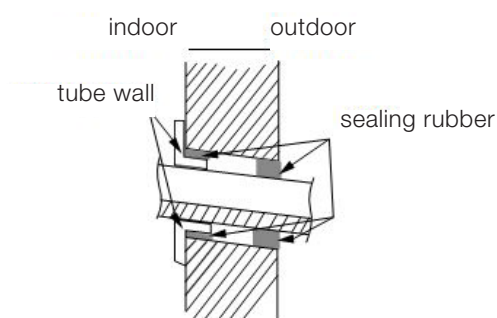
1. Coat the connecting pipes, power cable and drain hose with tape.
2. reserve a certain length of the exhaust pipe and power cable for installation. After having them covered for a certain length separating the discharge tube and the power cable (as shown in the figure).

3. cover them in the same way.
4. The coolant lines (gas / liquid) should be held separately at the end.
 - The power cable and the control wire can not be crossed.
 - The drain hose must be covered from the end.



4.6 WALL MOUNTING

1. Once covered, place the pipes and run them through the holes in the wall.
 - The drain hose must not be over-coated in order to avoid the obstruction.
2. Attach the indoor unit to the template.
3. Coat the spaces between the pipes and between pipes and the holes with the sealing rubber.
 - The drain hose must follow the angle of the hole in the wall as shown in FIG.
 - The water outlet can not take place in water so as to discharge smoothly.
4. Fix the pipes in the wall.
5. Check that the indoor unit is installed properly on the wall.
 - Tilt the exhaust pipe down slightly. It can not be bent.



5. CHECKS AFTER INSTALLATION

5.1 EQUIPMENT

Events to Monitor	Problems associated with incorrect installation
Installation is correct?	The unit may drop, vibrate or make noise.
Are the gas leakage been checked?	Insufficient cooling.
unit thermal insulation sufficient?	It may cause condensation and consequent loss of water drops.
Water drainage is optimal?	It may cause condensation and consequent loss of water drops.
The power supply conforms to the information in specific thermal label?	The unit may be damaged or the components could burn.
The power lines and pipes are installed correctly?	The unit may be damaged or the components could burn.
The grounding of the unit was made correctly?	Risk of electric leakage.
The lines are in accordance with the requirements?	The unit may be damaged or the components could burn.
Ci sono ostacoli vicino all'ingresso o all'uscita dell'aria delle unità interna o esterna?	The unit may be damaged or the components could burn.
It has stored the length of the pipes and the refrigerant charge?	It is not easy to decide the gas charge. Ask your installer or service center.

5.2 TEST THE INDOOR UNIT

1. Preparation the function test

- The customer approves the newly assembled machine.
- To report to the customer any important information about the machine.

2. the function test method

- Attach the power supply, press the ON / OFF button on the remote control to start the test.
- Press the MODE button to select AUTO, COOL, DRY, FAN to see if it works in the proper manner or not.

- If the internal temperature is lower than 16 ° C, the air conditioner can not begin to cool.

3. If there is a connection to a MULTI units, the function test should be done at the first power to ensure that you did a proper installation.

5.3 STEPS OF THE OPERATIONAL TEST

A. Use the remote control to select the cooling mode and set the temperature to 16 ° C. Point it to the Internal Unit display, press "+, -, +, -, +, -" for 5 seconds, the unit will show "LL" followed by a long whistle. This signals the start of the test.

B. The test is terminated when the display no longer shows "LL".

C. If the display shows "PA" and the outdoor unit is not in test mode, indicates that there is an installation error, then check the connection cables and the refrigerant connection pipes. After you correct the error to start the test.

NOTE: All units can function normally after passing the test.

6. MAIN FUNCTION IDRA

6.1 MAIN FUNCTION OF CONDENSER

The unit starts to operate once the ON mode is set.

During cold operation, the low temperature and low pressure gas from the heat exchanger (Evaporator) of each indoor unit enters the compressor to be compressed to reach a high temperature and high pressure state, then proceed and enter In the heat exchanger (condenser) of the condenser in which it exchanges heat with water to condense and pass from the state of steam to the liquid state. After passing through the rolling valve, the coolant undergoes a decrease in pressure and temperature.

After this, the coolant proceed to the evaporator of each of the indoor units to cool the air entering the unit.

Consequently, the refrigerant changes from the liquid phase to the vapor phase. This creates a thermodynamic cycle that is repeated to obtain the desired cooling conditions.

During heating operation, the 4-way valve is operated to reverse the coolant cycle. The coolant delivers heat to the inlet air to the indoor unit and absorbs heat from the inlet water to the condensate to obtain the required internal heating conditions.



7. SELF-DIAGNOSIS

7.1 ERROR CODES BETWEEN IDRA AND INDOOR UNIT

Error Code	Troubleshooting
b0	Return of cooling oil
b1	Anti-freeze protection
b2	Refrigerant recovery mode
CL	Filter cleaning reminder
d0	Compressor rms phase limit down
d1	Machine absorption too low
d2	Exhaustgas temperature limit down
d3	Frost protection for outdoor unit
d4	Overload limit down
d5	IPM limit temperature down
d6	Pack current limit down machine
dF	Oil return for heating or defrosting
E0	High discharge temperature protection outdoor unit
E1	Overload protection
E2	Compressor overload protection
E3	Shutdown for anti-freeze protection of outdoor unit
E7	4 way valve malfunction
E8	Anomalous outdoor ambient temperature protection
H0	Compressor stalling

H1	Startup failure
H2	Compressor phase current peak protection
H3	Compressor phase current RMS peak protection
H4	IPM protection
H5	IPM overheating protection
H6	Compressor phase circuit deceptor error
H7	Phase loss
H8	Outdoor unit fan motor failure
H9	Outdoor unit DC fan motor circuit deceptor error
L0	Jumper configuration error
L1	Error of the "zero crossing detection" circuit
L2	Indoorn unit fan motor error
L3	Indoorn unit display communication error between I.U. and O.U.
L4	Select the port level abnormal error
L5	Indoor EEPROM error
L6	Outdoor display communication error between I.U. and O.U.
L7	Communication error between I.U. and remote control
LL	Trial running
P0	Outdoo unit error EEPROM
P1	Charging error of the circuit
P2	Feedforward voltage protection
P3	Over-voltage protection
P4	Low voltage protection
P5	DC link voltage drop error
P6	Machine current detection error

P7	Over-current protection
P8	PFC error
P9	PFC protection
PA	I.U. and O.U. mismatch
PC	Mode conflict
Pd	Select the outdoor port level abnormal error
U0	Indoor ambient temperature sensor short/open-circuit
U1	Indoor unit pipe midway temperature sensor error
U2	Outdoor ambient temperature sensor error
U3	Outdoor mid-coiltemp sensor error
U4	Outdoor discharge temperature sensor error
U5	IPM temperature sensor short/open-circuit
U6	Pipe outlet temperature sensor short/open-circuit
U7	Pipe inlet temperature sensor short/open-circuit
U8	Discharge temperature sensor error

8. MAINTENANCE

IDRA UNIT

8.1 ROUTINE MAINTENANCE

Regular maintenance is essential to maintain the efficiency of the unit both in terms of operation and energy.

The maintenance plan that the Technical Assistance Centre should be observed annually, provides the following operations and checks:

- Periodic cleaning of the water filter inside the unit SMALL.
- Periodic cleaning of the air filter (blower).

- Efficiency safeties.
- Power supply voltage.
- Power consumption.
- Tightness of electrical and IDRA connections.
- State of the contactor / compressor / s.
- Verification of operating pressure and cooled.

8.2 CHEMICAL CLEANING EXCHANGE

It is recommended to chemically wash the plate heat exchanger every 3-4 years of operation.

To do this refer to the CAT.

8.3 REFRIGERANT CHARGE

The condensing units are loaded with R410A refrigerant gas and tested in the factory.

Under normal conditions (length within the ranges shown in the data sheets), thus they do not need any intervention on the refrigerant control.

However, over time, small leaks may develop at the joints leading to loss of refrigerant and draining of the circuit, causing the unit to function poorly.

In these cases must be found by the leaks of refrigerant, should be repaired and recharged refrigerant circuit.

The charging procedure is as follows:

- Empty and IDRA the entire refrigerant circuit using a vacuum pump is connected to the outlet of high pressure to the low outlet
 - Connect the refrigerant cylinder to the gas outlet on the low pressure line.
 - Charge the quantity of refrigerant gas indicated on the rating plate of the device in the liquid phase.
 - Always check the undercooling values which must be between 4 and 8 ° C and between 5 and 10 ° C (supercooling).
- In the event of partial leaks, the circuit must be completely emptied before being recharged.

The R410A refrigerant must be charged only in liquid phase.

Operating conditions other than nominal, may produce considerably different values.

Seal testing or identification of leaks must only be performed using R410A refrigerant gas, checking with a suitable leak detector.

It is prohibited to load the refrigerant circuits with a different refrigerant than the one indicated on the identification plate. Use a different refrigerant may cause serious damage to the compressor.

You must never be used in the cooling circuit, oxygen or acetylene or other flammable or poisonous gases because they can cause explosion or poisoning.

You may not use oils other than those indicated. Use oils other than those indicated may result in serious damage to the compressor.

You may not use tracer products for the detection of leaks in the cooling circuit.

8.4 FAULTS AND POSSIBLE REMEDIES

Error	Caus	Remedy	U/INS/CAT
The compressor does not start	Power failure	Verify the presence of voltage	INS
	main switch in pos. OFF	Check the upstream safety systems	U
	low supply voltage	Check power line	INS
	Fault compressor condenser	Replace the part	CAT
	compressor failure	Replace the part	CAT
	High pressure operation	Rearm pressostatato	U/INS/CAT
Yield insufficient	Lack of coolant	Check	INS
	Wrong size of the equipment	Check	INS
	Operation outside of the conditions the manufacturer's recommended operating	Check	INS
Compressor noisy	Part of the refrigerating circuit in contact with the carpentry	Check	INS
	Return of liquid to the compressor	Check charging / cleaning filters	CAT
	not suitable unit fixing	Check	INS
	Powered by reversed phase (400V models)	Reverse one phase	INS
Noise and vibrations	Contact with metal bodies	Check and outdistance	IST
	loose or missing screws	Tighten the screws	IST
The compressor He stops for intervention protections	Excessive head pressure	Check	CAT
	Low suction pressure	Check	CAT
	low supply voltage	Check the power supply	INS
	Electrical connections badly tightened	Check	INS
	Operation outside the permissible limits	Check	INS
	Bad operation or pressure probes	Replace the part	INS /CAT
	Thermal protection trip	Check electrical insulation windings	CAT
Pressure flow High > 24 bar	Excessive refrigerant	Check	CAT
	dirty filter fan units (in heat pump)	Clean the filter	U/INS /CAT
	Hot air layering (in heat pump)	Check	INS /CA
Pressing aspiration low <1 bar	Refrigerator discharge circuit	Check and reload	CAT
	Exchanger evaporator side blocked	Check and if necessary replace the component	CAT
	dirty filter fan units (cooling)	Clean filter	U/INS /CAT
Absorption high electrical	Refrigerant pressure is too high compared to what is recommended	Check maximum absorption expected in data and characteristics table	INS/CAT
	Wrong pressure valve adjustment	Calibrated valve pressure switch	INS/CAT
	Voltage does not comply	Check voltage supply	IST
The water of cooling It circulates also in machine off	Pressure valve not calibrated properly	Calibrate the pressure valve	INS /CAT
The blower does not work off blower fan and spies extinguished	Power failure	Verify the presence of voltage	U/INS
	main switch in pos. OFF	Check the upstream safety systems	U/INS
	Intervention safety pressure AP (high pressure)	Check the water flow and reset the pressure switch by pressing the button behind the black cap on the front panel (in case of dual compressor model there are 2 buttons, press them both)	U/INS/CAT

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