RIVACOLD

UK

USE AND MAINTENANCE HANDBOOK

SX

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MASTERING COLD

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1. PURPOSE OF THE MANUAL

The purpose of this manual is to assist operators in placing the condensing unit into operation correctly, as well as to supply advice and explanations about the relevant safety regulations in force within the European Community and to avoid any possible risks caused by incorrect use.

2. NORMS FOR GENERAL USE

- For a correct and safe use of the machine it is necessary to follow the instructions and guidelines stated in this manual since these refer to:
  - ✓ installation methods
  - ✓ machine use
  - ✓ maintenance
  - ✓ placing out of service and disposal.
- *The manufacturer cannot accept any liability for damages resulting from failure to follow the instructions, advice and warnings given in this use and maintenance manual.*
- Read the labels on the machine with care. Do not cover them for any reason and replace them in the event that they become damaged.
- Keep this manual carefully.
- The manufacturer reserves the right to update this manual without any prior notice.
- The machines were designed solely for industrial and commercial refrigeration in a stable seat (the application range is quoted in the company's general catalogue). *They are not intended for any other purpose*. Any other use is to be considered improper and therefore dangerous.
- After removing the packaging, check that every part of the machine is intact; if not, contact the relevant dealer.
- Do not use the machine in atmospheres with inflammable gas or in environments where there is a risk of explosion.
- If an operating fault occurs, switch off the machine.
- Any cleaning or maintenance operations must be carried out by specialist technical staff only.
- Do not wash the unit using direct or pressurised jets of water or with noxious substances.
- Do not use the machine without its safeguards.
- Do not place liquid containers on the units.
- Keep the machine well away from sources of heat.
- In case of fire use a dry-chemical extinguisher.
- Packaging material must be suitably disposed of in accordance with current laws.

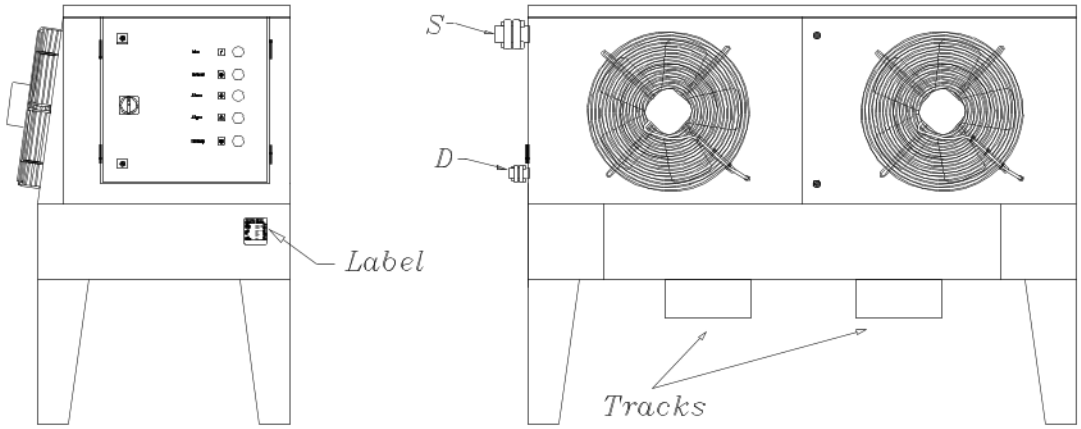
3. MACHINE IDENTIFICATION

All machines are equipped with an identification label (the position of which is shown in Drawing. 1) containing the following data:

- Code number
- Serial number
- Electrical input (A)
- Electrical input (W)

- Refrigerant type
- Power supply tension (Volt/Ph/Hz)
- Max. operating pressure value PS HP (high-pressure side) – PS LP (low-pressure side)
- Machine category according to the Directive 97/23EC (PED).
- The label position is shown in the drawing below.

Drawing 1



Serial number identification:

- 1st and 2nd numbers = year of production
- 3rd and 4th numbers = week number of the year in which the machine was produced
- 5th, 6th, 7th and 8th numbers = progressive number

4. MACHINE DESCRIPTION

MX-SX units are condensing units and split system with housing for commercial refrigeration. They have been designed to be installed outside. They are equipped with an electrical panel and a self-supporting casing in epoxy-painted electrically galvanised steel.

5. INSTALLATION

a) Before installing, it is necessary to make a layout of the refrigerating system; this must include the following: all components of the refrigerating system (i.e.: condensing unit, evaporator, thermostatic valve, coldroom front electrical panel, piping dimensions, any safety devices, etc.)

b) system location

c) piping location.

- Installation must only be performed by qualified staff with the necessary technical requirements according to the country in which the machine is installed.
- The machine must not be installed in a closed environment where good air flow is not guaranteed.
- Leave enough space around the condensing unit for it to be possible to perform maintenance operations in safe conditions.
- Lift the machine by means of a forklift truck (or other hoisting equipment), inserting the forks into the two tracks on the unit, as shown in Drawing 3. When installation is complete, remove the tracks by unscrewing the relevant fastening screws.
- For information about weight, see the table of general features at the end of this manual.
- The machine must be placed on the floor in a vertical position only. It can be fixed to the floor by passing screw anchors (Fischer) through the relevant holes in the unit frame.

5. 1 Evaporator installation

See Drawing 2 and attached documentation.

Drawing 2

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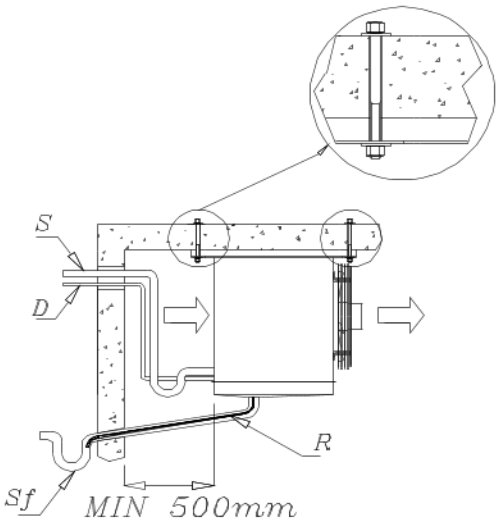


Key
S = Suction pipe
D = Discharge pipe
Sf = Water drainage siphon
R = Drainage heater (MBP and LBP models only)

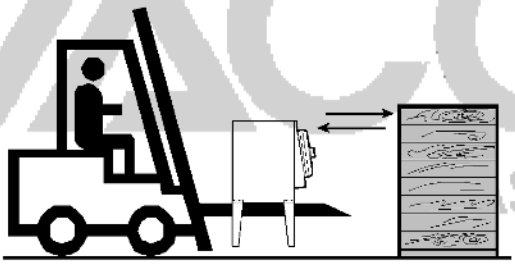
5. 2 Refrigerating connections

In order to make the connections, suction and liquid line piping with the same diameters as the connections fitted on the machine must be provided (see the table of general features at the end of this manual).

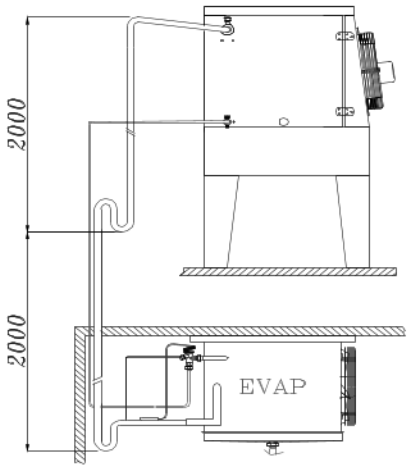
These diameters are valid up to a maximum length of 10m. For longer sizes, piping diameters must be of a correct size to guarantee the proper gas speed.

Pipes must be fixed to the wall on bends and welding points and every 1.5m – 2m on straight stretches.

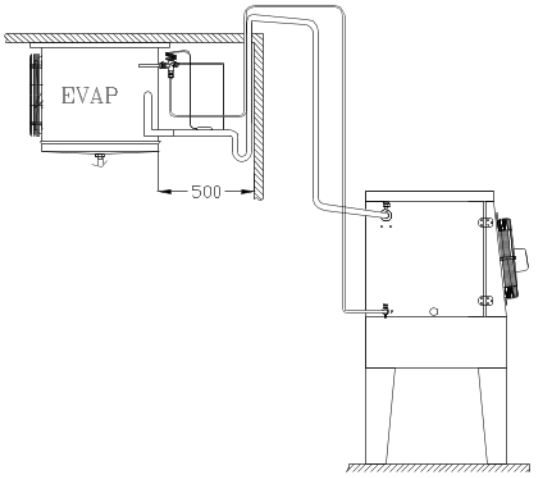
Drawing 3



Drawing. 4



Drawing. 5



5. 3 Suction line insulation

With an evaporating temperature lower than–-10°C, the suction line pipes must be insulated with an anti-condensate pipe that has a thickness of at least 13mm in order to limit its overheating.

5. 4 Oil return

All systems must be designed so as to ensure oil return to the compressor.
In the situation shown in Drawing 3 (condensing unit placed above the evaporator), it is important to fit siphons along the suction line every 2 m of difference in height so as to guarantee oil return to the compressor. In any case, along horizontal stretches it is important for the suction line to have a slope of at least 3% towards the compressor.

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5. 5 Adding oil

In the majority of installations where all piping is no longer than 10 m, it is not necessary to add oil. However, when the pipes are oversized compared to standard conditions or they are longer than 10m, a small quantity of oil must be added.

5. 6 Vacuum

For the correct operation of the refrigerating equipment and the duration of the compressor, it is very important for the vacuum in the system to be set correctly. This will ensure that air and above all, humidity contents are below the permitted values. The introduction of new gas types has meant the use of new polyester-type oils that have high-level hygroscopic characteristics and which require more attention when setting the vacuum. We would advise setting the vacuum on both sides of the circuit. In any case, the target value is a pressure no higher than 5 Pa.
Important: in order to avoid irreparable damage to the compressor, never start it in vacuum conditions and without the gas charge.
During the vacuum and charge procedure, remember to energise the solenoid valve coil of the liquid line

5. 7 Refrigerant charge

After the vacuum-setting operation, the system must be charged with the type of refrigerant stated on the label or with one of the alternative types allowed. To charge the refrigerant correctly, we recommend that, after setting the vacuum, you pump part of the refrigerant into the compressor to "break the vacuum". Then start the compressor so that it sucks up the residual part of the refrigerant.
For the correct calculation of the gas charge, connect gauges to the pressure inlets (already fitted). Pressure values must be compatible with the operating conditions of the machines.
Important: mixtures of refrigerating gas must be charged into the system in their liquid state only.
Charging operations must be carried out by specialised technicians only.
For charging, recovering or checking the refrigerant, use gloves to protect against low temperatures.

5. 8 Leakage checks

A system can operate correctly over time and for the entire duration of the compressor only if all instructions for a correct installation are followed. These include the absence of refrigerant leaks. It has been estimated that leaks of 10% of the refrigerant charge during 15 years of compressor operation still guarantee a good level of operation of the refrigerating system. With the new types of gas (R134a, R404a and mixtures) the possibilities of refrigerant leaks through welding or connections that have not been carried out correctly increase because of the reduced molecular dimensions of these gas. For these reasons, it is very important that welding is checked for leakage using methods and equipment that are suitable for the type of refrigerant in use.

5. 9 Crankcase heater (supplied)

Whenever the compressor operates in ambient temperatures of less than +5°C, it is compulsory to use a crankcase heater in order to avoid the build-up of liquid in the lower side of the compressor during stoppages. Furthermore, it is necessary to choke the condenser, for example, by reducing its air capacity (i.e.: by means of a speed regulator).

5. 10 Operating cycles

- The system has to be sized so as not to have more than 5 on/off cycles per hour.
- The intervention of the Thermal/Amperometric protection device switches off the compressor, which will be started again after the time required for the protection device contacts to be connected.

5. 11 Operating times

- The systems must be sized for max. 80% of standard compressor operation.
- 100% compressor operation only occurs in special overload and ambient temperature conditions that are outside of the normal permitted operating limits.

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5. 12 Pressure switches

- All machines are equipped with HBP safety pressure switches set at max. 28 bar.
- LBP safety pressure switches are set according to the gas in use and the compressor application. We recommend using the value stated in the following table:

	Gas	°C=[bar]	Set	Differential
LBP Application MBP (medium temp.)	R404A	-25°C=1.5 bar	3 bar	1.5 bar
LBP Application LBP (low temp.)	R404A	-46°C=0 bar	3 bar	3 bar

5. 13 Pressure relief valves on the liquid receiver

- The machines in risk "category 0" are not equipped with pressure relief valves.
- The machines in risk "category I" are equipped with a fusible plug. The machine must not be charged with more than 10 kg of gas.
- The machines in risk "category II" are equipped with pressure relief valves.

The risk category of each model is stated on its identification label.

5. 14 Electrical installation

The electrical installation must be performed by qualified staff with the relevant technical skills according to the requirements of the country where the machine is installed.

- Fit a thermomagnetic switch with a type-C intervention curve (10-15 In) between the power supply line and the machine-board electrical panel and make sure that the mains voltage corresponds to the voltage stated on the machine label. The permitted tolerance is ± 10% of rated voltage. When sizing the differential thermomagnetic switch, take into account the electrical input values stated on the label.
- **Please note: the thermomagnetic switch must be placed next to the machine so as to be easily seen and reached by a technician in case of maintenance**.
- The section of the power supply cable must be adequate for the power absorbed by the condensing unit, which is stated on the relevant label fixed to the machine itself.
- The law requires that the unit be earthed; therefore, it is necessary to connect it to an efficient earthing system. No liability whatsoever can be accepted in the event of failure to comply with this requirement or if the electrical system to which the machine is connected does not comply with the regulations in force.
- For machines with three-phase motor-driven fans, it is necessary to check the rotation direction of the motor fans. If it does not correspond to the one shown by the arrow on the label placed near the fans, it is necessary to switch off the machine and invert two phases of the mains; it is then possible to re-start the machine.
- A mechanical thermostat set at 40°C must be fitted to the evaporator; this will deactivate the heaters in case of overheating. The thermostat bulb must be placed in the fin assembly in the highest position inside the evaporator.

6. TECHNICAL DATA

All MX condensing units are supplied in nitrogen pressure. They are provided with safety pressure switches with a variable setting on the HBP and LBP line.

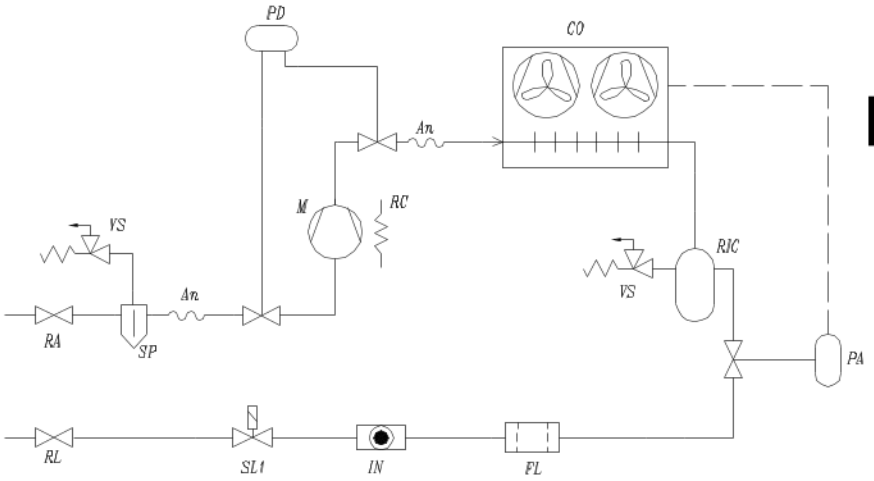
The refrigerating diagram of a condensing unit with air-cooled condensation has been included here below:

- Drawing 6: refrigerating diagram of a condensing unit
- Refrigerating diagrams for non-standard units will be attached. These contain all parts which form the condensing unit.

Drawing. 6

Key to symbols:

M = Compressor
CO = Condenser
RIC = Liquid receiver
RA = Suction shut-off valve
RL = Liquid shut-off valve
SP = Liquid separator
SL1 = Liquid solenoid valve
RC = Crankcase heater
IN = Sight glass
An = Vibration damper
PA = High pressure switch
PD = Double pressure switch (Safety)
FL = Drier filter
VS = Pressure relief valve/fusible plug



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These condensing units can be used in various type of installations:

- For cold rooms
- For water chillers, etc.

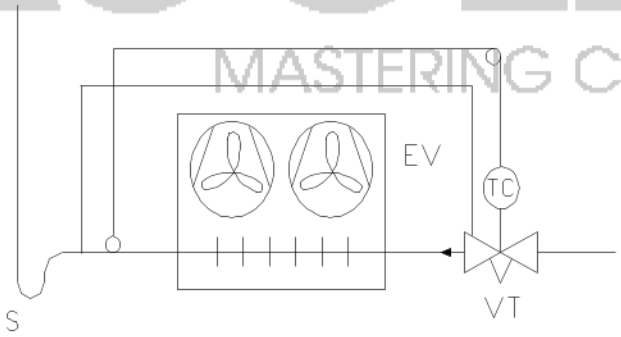
Each condensing unit can be connected to one or more evaporators, of course, always following refrigeration rules. In any case, it is necessary to choose every single component with care. The following section contains examples of refrigerating diagrams which complete the refrigerating diagrams shown above.

Drawing 7 (refrigerating diagram evaporating part)

Drawing 7

Key to symbols:

EV = Evaporator
VT = Thermostatic valve
S = Siphon



7. WIRING DIAGRAM

The wiring diagrams have been placed inside the control panel of the machine.

8. PRESSURE RELIEF VALVE (where provided)

8. 1 Instructions and limits of use

Replacement of the pressure relief valve is suggested whenever; during the drainage, the build-up of component processing and pipe residues happens to make the shutting of the seal defective.
Before you replace the valve, make sure that the system is not under pressure or at high-level temperature in the area you are operating.

8. 2 Maintenance/inspection and valve setting

Warning! Maintenance is not provided for pressure relief valves. The removal of the cap or the tampering of the seal are considered unauthorized modifications of the setting. This will void the manufacturer's guarantee.

The inspection of the pressure relief valves is reserved to specific Bodies in charge and is regulated by the current laws of the country of installation.

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8. 3 Expected lifetime

A control of the pressure relief valve is suggested every 5 years.

9. MAINTENANCE AND CLEANING

Maintenance and cleaning must be carried out by specialist technicians only.

First of all, make sure that the power supply is disconnected.

- Regularly clean **(at least every month)** the condenser by removing dust and grease. If the environment where the unit is located is very dusty, more frequent cleaning may be necessary.
- **In the event that machine parts need replacing, they have to be replaced by items exactly the same to the originals ones**
- Clean the contacts, fixed and mobile, of all contactors; replace them if they show signs of wear. **(every 4 months)**
- Check that all electric terminals, both on electrical panels and terminal boards, are properly connected; also check carefully that the all fuse elements are correctly clamped. **(every 4 months)**
- Visually check the entire refrigerating circuit, even inside the machines, for any traces of refrigerant leaks, which are signalled by traces of lubricant oil. Intervene in due time and check further in case of doubts. **(every 4 months)**
- Check that refrigerant is flowing regularly by means of the indicator on the liquid line. **(every 4 months)**
- Check the oil level by means of the special indicator (if fitted) placed on the compressor crankcase. **(every 4 months)**
- Carefully check the colour of the element which is sensitive to humidity through the indicator on the liquid line. Green means dry; yellow means humidity. In the event of humidity, stop the machine immediately, replace the filter on the liquid line and replace both the refrigerant and the oil. Repeat this check after 3 days of operation. **(every 4 months)**
- Check the noise level of the compressor. This check must be performed with caution, as it has to be carried out while the system is operating. Check for ticking or vibrations that result from breakdowns or excessive mechanical friction between moving parts. **(every 4 months)**
- **Important note:** At the end of maintenance, replace all previously removed guards (housing and grid).
- Do not remove the pressure relief valve without having previously recovered the gas inside the liquid receiver.

10. DISPOSAL

If the machine is placed out of service, it is necessary to disconnect it from the mains. The gas contained inside the system must not be dispersed into the environment. The compressor oil is subjected to differentiated waste collection regulations; therefore, we recommend that you do not dispose of the unit as normal iron scrap but that you use a special collection centre, as per the standards and regulations in force.

11. OPTIONAL ITEMS

- **Condenser fan speed variator**

  This controls the condenser fan speed according to condensing pressure so as to keep it within set values. It is installed in the high-pressure circuit. The instructions for use are issued together with the technical documents of the machine.

- **R22 gas**

  Alternative gases to the R404A standard and recognisable by the appliance code: E=R22

- **Oil separator**

  When the distance between the condensing unit and the evaporator is more than 10 m, the fitting of an oil separator is recommended. This intercepts the oil driven by the compressed gas and it regularly returns it to the machine crankcase. In this way, the oil separator helps the lubrication of the moving parts of the compressor. Moreover, by removing or reducing the oil film on the exchanging surfaces of the condenser and the evaporator it improves the thermal transmission of those devices.

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- **Voltage monitor**

  This is an electronic instrument that is installed at specific request only. It is used to cut off the power to the machine if the voltage upstream of the unit exceeds set limits. These limits (minimum and maximum) can be adjusted; power is supplied to the unit automatically once normal conditions have been restored and after a delay that can be programmed into the monitor. The monitor is installed inside the electrical panel.

- **Different voltage**

Es: SXM235Z02**2**

2	400/3/50 Hz
4	220/3/60 Hz
6	460/3/60 Hz
7	380/3/60 Hz
8	230/3/50 Hz

- **Differential thermomagnetic switch**

  This device protects the condensing unit against overloads, short circuits and indirect contact.

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12.TROUBLESHOOTING TABLE

SYMPTOMS →

CAUSES ↓

CAUSES \ SYMPTOMS	Suction pressure too low	Suction pressure too high	Discharge pressure too low	Discharge pressure too high	Suction and discharge pressures tend to balance each other out	Suction temperature too low	Suction temperature too high	Discharge temperature too low	Discharge temperature too high	Excessive difference between inlet and outlet water temperature	Excessive difference between average water temperature and condensing temperature	Compressor oil level too low	Hissing caused by the passage of gas through expansion parts	Thermostatic expansion valve blocked closed	Evaporator full or insufficiently defrosted	Gas bubbles can be seen through the indicator	Impossible to set the vacuum	Unusual noises inside the compressor	Frequent HP pressure switch cut out	Frequent LP pressure switch cut out	The compressor starts too quickly	The compressor works continuously	The compressor does not start up
Suction shut off valve closed or throttled	●																			●			
Discharge shut off valve closed or throttled				●															●				
Suction valve or piston portions unsealed		●	●				●		●								●						
Unsealed discharge valve		●	●						●								●		●		●	●	
Clogged discharge pipes				●																●			
Clogged suction pipes, wrongly sized suction pipes or evaporator with insufficient power	●																						
Suction pipes not correctly insulated							●																
Expansion valve capacity too high		●	●			●		●								●							
Expansion valve capacity too low	●					●			●				●		●					●			
Lifting of deposits caused by suction of liquid or foreign matters																		●					
Clogged liquid pipes				●											●								
By-pass shut off valve opened or perforated rupture disk		●	●		●				●								●			●			
Gauge not set	●	●		●	●						●												
Imprecise thermometer						●	●	●	●	●	●												
Inadequate cooling water flow				●					●	●									●				
Condenser dirty inside or outside				●							●								●				
Evaporator to be defrosted, dirty inside or outside, presence of oil.	●																			●			
Presence of air or of gas that cannot be condensed				●					●		●					●			●				
Condensing water temperature too high									●										●				
Lack of refrigerant	●		●				●		●				●		●	●				●		●	●
Excess refrigerant		●		●		●													●				
Clogged suction filter	●											●								●			
Closed shut off valve on oil return pipe												●											
Dirty filter on oil return												●											
Connecting rod assembly, bearings or segments worn																		●					
Clogged expansion valve filter	●						●		●				●		●								
Lack of oil												●											
Ice formed on expansion valve needle	●						●		●					●	●					●			
Expansion valve failure	●	●	●	●		●	●	●	●				●	●	●	●							
Excess oil in the circuit	●																			●			
Condensing water too cool or too plentiful			●																				
Insufficient air flow to the air-cooled condenser				●																			
HP pressure switch incorrectly adjusted																			●				
Evaporator fan/s motor/s not working																				●			
LP pressure switch incorrectly adjusted																				●	●		

12.TROUBLESHOOTING TABLE

SYMPTOMS →

CAUSES ↓

CAUSES \ SYMPTOMS	Suction pressure too low	Suction pressure too high	Discharge pressure too low	Discharge pressure too high	Suction and discharge pressures tend to balance each other out	Suction temperature too low	Suction temperature too high	Discharge temperature too low	Discharge temperature too high	Excessive difference between inlet and outlet water temperature	Excessive difference between average water temperature and condensing temperature	Compressor oil level too low	Hissing caused by the passage of gas through expansion parts	Thermostatic expansion valve blocked closed	Evaporator full or insufficiently defrosted	Gas bubbles can be seen through the indicator	Impossible to set the vacuum	Unusual noises inside the compressor	Frequent HP pressure switch cut out	Frequent LP pressure switch cut out	The compressor starts too quickly	The compressor works continuously	The compressor does not start up
Excessive cooling requested																						●	
Refrigerating unit incorrectly set																		●					
Thermostat set too high or damaged																							●
Current interrupted: fuse blown, thermomagnetic switch contacts damaged																							●
Closed solenoid valve on the liquid line																							●

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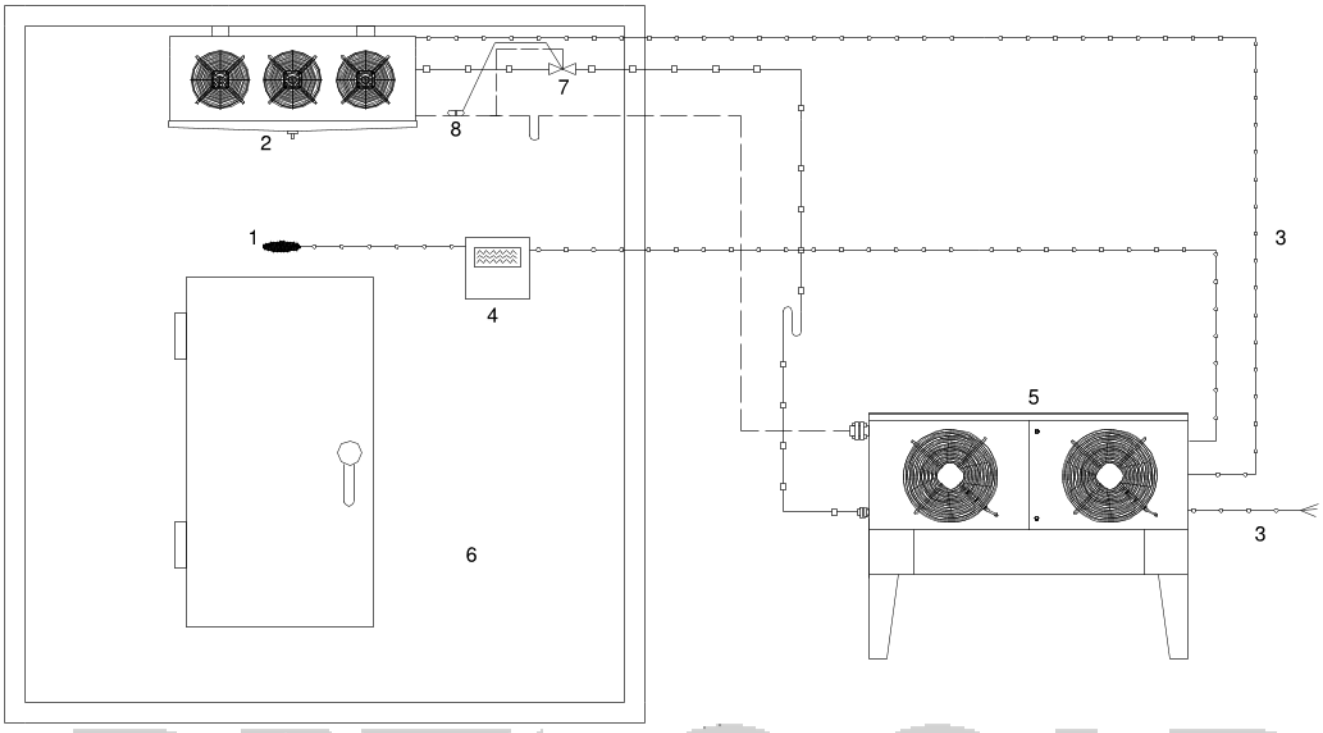
Schema di collegamento dell'unità SX standard.

Connection diagram for the standard SX unit.

Schéma de connexion de le systema SX standard.

Esquema de conexión de la unidad SX estándar.

Anschlussschema der Einheit SX Standard.



1 = **Sonda di temperatura**/Temperature probe/ Temperatur-Fühler/sonde de température/sonda de temperatura
2 = **Evaporatore**/Evaporator/Évaporateur/Evaporador/Verdampfer
3 = **Cavo di alimentazione**/Power lead/Câble d'alimentation/Cable de alimentación/Stromkabel
4 = **Quadro fronte cella**/Cold room control panel/Boîte de controle chambre froide/Cuadro frontal cámara/Fernschalttafel
5 = **Unità condensatrice**/Condensing unit/Groupe de condensation/Unidad condensadora/Verflüssigungssätze
6 = **Cella frigorifera**/Coldroom/Chambre froide/Celda frigorífica/Kühlzelle
7 = **Valvola termostatica**/Thermostatic valve/Vanne thermostatique/Válvula termostática/Thermostatventil
8 = **Bulbo valvola termostatica**/Thermostatic valve bulb/Bulbe detendeur/Bulbo valvola termostatica/Kegel-Expansionsventil

Linea del liquido/Liquid line/Ligne du liquide/Línea del líquido/Flüssigkeitsleitung

Linea di aspirazione/Suction line/Ligne d'aspiration/Línea de aspiración/Ansaugleitung

Collegamento elettrico/Wiring/Branchement électrique/Conexión

TABELLA CARATTERISTICHE (SERIE MX)/ TECHNICAL FEATURES (MX RANGE)
TABLEAU CARACTÉRISTIQUES (GAMME MX)
TABLA CARCTERÍSTICAS (GAMA MX)/TABELLE CHARAKTERISTIKEN (MX REIHE)

Codice Code	Gas Gas	Tensione Voltage	Ø attacchi Pipe fittings		Peso Weight	Categoria PED PED category
			D	**S**	**Kg**	
MXM235Z022	R404A	400/3/50	10	16	188	1
MXM235Z032	R404A	400/3/50	10	16	195	1
MXM235Z042	R404A	400/3/50	10	18	199	1
MXM235Z052	R404A	400/3/50	12	28	211	1
MXM245Z022	R404A	400/3/50	16	28	258	2
MXM245Z032	R404A	400/3/50	16	28	289	2
MXM245Z042	R404A	400/3/50	16	28	295	2
MXM245Z052	R404A	400/3/50	16	35	304	2
MXM250Z042	R404A	400/3/50	16	35	425	2
MXM250Z052	R404A	400/3/50	16	35	441	2
MXM256Z032	R404A	400/3/50	22	42	555	2
MXM256Z042	R404A	400/3/50	22	42	570	2
MXM256Z052	R404A	400/3/50	22	54	650	2
MXM363Z042	R404A	400/3/50	22	54	802	2
MXM363Z052	R404A	400/3/50	22	54	863	2
MXL235Z022	R404A	400/3/50	12	28	206	1
MXL235Z032	R404A	400/3/50	12	28	212	1
MXL235Z052	R404A	400/3/50	12	28	243	1
MXL245Z022	R404A	400/3/50	16	28	287	2
MXL245Z032	R404A	400/3/50	16	35	332	2
MXL245Z052	R404A	400/3/50	16	35	347	2
MXL250Z032	R404A	400/3/50	22	42	430	2
MXL250Z042	R404A	400/3/50	22	42	480	2
MXL250Z052	R404A	400/3/50	22	42	503	2
MXL256Z042	R404A	400/3/50	22	54	661	2
MXL256Z052	R404A	400/3/50	22	54	697	2
MXL363Z042	R404A	400/3/50	28	67	857	2
MXL363Z052	R404A	400/3/50	28	80	955	2

TABELLA CARATTERISTICHE (SERIE SX) / TECHNICAL FEATURES (SX RANGE)
TABLEAU CARACTÉRISTIQUES (GAMME SX)
TABLA CARCTERÍSTICAS (GAMA SX)/TABELLE CHARAKTERISTIKEN (SX REIHE)

Codice Code	Gas Gas	Tensione Voltage	Ø attacchi Pipe fittings		Cond.unit weight	Evap weight	Categoria PED PED category
			D	**S**	**Kg**	**Kg**	
SXM235Z022	R404A	400/3/50	10	16	188	29,9	1
SXM235Z032	R404A	400/3/50	10	16	195	41	1
SXM235Z042	R404A	400/3/50	10	18	199	41	1
SXM235Z052	R404A	400/3/50	12	28	211	55	1
SXM245Z022	R404A	400/3/50	16	28	258	72	2
SXM245Z032	R404A	400/3/50	16	28	289	91	2
SXM245Z042	R404A	400/3/50	16	28	295	120	2
SXM245Z052	R404A	400/3/50	16	35	304	120	2
SXM250Z042	R404A	400/3/50	16	35	425	169	2
SXM250Z052	R404A	400/3/50	16	35	441	169	2
SXM256Z032	R404A	400/3/50	22	42	555	205	2
SXM256Z042	R404A	400/3/50	22	42	570	205	2
SXM256Z052	R404A	400/3/50	22	54	650	283	2
SXM363Z042	R404A	400/3/50	22	54	802	283	2
SXM363Z052	R404A	400/3/50	22	54	863	385	2
SXL235Z022	R404A	400/3/50	12	28	206	39	1
SXL235Z032	R404A	400/3/50	12	28	212	43	1
SXL235Z052	R404A	400/3/50	12	28	243	53	1
SXL245Z022	R404A	400/3/50	16	28	287	69	2
SXL245Z032	R404A	400/3/50	16	35	332	87	2
SXL245Z052	R404A	400/3/50	16	35	347	115	2
SXL250Z032	R404A	400/3/50	22	42	430	163	2
SXL250Z042	R404A	400/3/50	22	42	480	179	2
SXL250Z052	R404A	400/3/50	22	42	503	187	2
SXL56Z042	R404A	400/3/50	22	54	661	187	2
SXL256Z052	R404A	400/3/50	22	54	697	267	2
SXL363Z042	R404A	400/3/50	28	67	857	267	2
SXL363Z052	R404A	400/3/50	28	80	955	350	2

TABELLA COMPONENTI /COMPONENTS TABLE
TABLEAU COMPOSANTS
TABLA COMPONIENTES / BESTANDTEILE TABELLE

Split System	Condensing Unit	Evaporator	Thermostatic valve				Drain heater	Separate control panel - outside the cold room
			Code	Orifice	Connectors	Valve support		
SXM235Z022	MXM235Z022	RCM13516ED	TES2/CODS	ORIF04/CODS	068-208100	-	RES3000	50099045
SXM235Z032	MXM235Z032	RCM23506ED	TES2/CODS	ORIF04/CODS	068-208100	-	RES3000	50099045
SXM235Z042	MXM235Z042	RCM23506ED	TES2/CODS	ORIF05/CODS	068-208100	-	RES3000	50099045
SXM235Z052	MXM235Z052	RCM33506ED	TES2/CODS	ORIF06/CODS	068-208100	-	RES3000	50099045
SXM245Z022	MXM245Z022	RCM43506ED	TES5N	ORIF1		TE5-S	RES3000	50099045
SXM245Z032	MXM245Z032	RCM53506ED	TES5N	ORIF2		TE5-S	RES3000	50099045
SXM245Z042	MXM245Z042	ICE42A06ED	TES5N	ORIF2		TE5-S	RES3000	50099045
SXM245Z052	MXM245Z052	ICE42A06ED	TES5N	ORIF3		TE5-68B4005	RES3000	50099045
SXM250Z042	MXM250Z042	ICE43A06ED	TES5N	ORIF3		TE5-68B4005	RES3000	50099045
SXM250Z052	MXM250Z052	ICE43A06ED	TES5N	ORIF3		TE5-68B4005	RES3000	50099045
SXM256Z032	MXM256Z032	ICE52A06ED	TES5N	ORIF4		TE5-68B4012	RES3000	50099045
SXM256Z042	MXM256Z042	ICE52B06ED	TES5N	ORIF4		TE5-68B4012	RES3000	50099045
SXM256Z052	MXM256Z052	ICE53A06ED	TES12-68B3347	ORIF-4		TE20-68B4017	RES3000	50099045
SXM363Z042	MXM363Z042	ICE53B06ED	TES12-68B3347	ORIF-4		TE20-68B4017	RES3000	50099045
SXM363Z052	MXM363Z052	ICE54A06ED	TES55-68G3302	TES55-37/68G2011		TES55-68G4002	RES3000	50099045
SXL235Z022	MXL235Z022	RCM23508ED	TES2MOP50S	ORIF05/CODS	068-208100		RES3000	50099045
SXL235Z032	MXL235Z032	RCM23518ED	TES2MOP50S	ORIF05/CODS	068-208100		RES3000	50099045
SXL235Z052	MXL235Z052	RCM33508ED	TES5	ORIF1		TE5-S	RES3000	50099045
SXL245Z022	MXL245Z022	RCM43508ED	TES5	ORIF1		TE5-S	RES3000	50099045
SXL245Z032	MXL245Z032	RCM53508ED	TES5	ORIF2		TE5-S	RES3000	50099045
SXL245Z052	MXL245Z052	ICE42A10ED	TES5	ORIF3		TE5-68B4005	RES3000	50099045
SXL250Z032	MXL250Z032	ICE43A10ED	TES5	ORIF3		TE5-68B4005	RES3000	50099045
SXL250Z042	MXL250Z042	ICE43B10ED	TES5	ORIF4		TE5-68B4012	RES3000	50099045
SXL250Z052	MXL250Z052	ICE52A10ED	TES5	ORIF4		TE5-68B4012	RES3000	50099045
SXL256Z042	MXL256Z042	ICE52B10ED	TES12-68B3348	ORIF-4		TE20-68B4017	RES3000	50099045
SXL256Z052	MXL256Z052	ICE53A10ED	TES12-68B3348	ORIF-4		TE20-68B4017	RES3000	50099045
SXL363Z042	MXL363Z042	ICE53B10ED	TES20-68B3353	ORIF01/TES20		TE20-68B4017	RES3000	50099045
SXL363Z052	MXL363Z052	ICE54B10ED	TES12-68B3348	ORIF-4		TE20-68B4017	RES3000	50099045

REGISTRO MANUTENZIONE/MAINTENANCE TIME-SHEET/REGISTRE ENTRETIEN
REGISTRO MANTENIMIENTO/WARTUNGSVERZEICHNIS

DATA DATE DATE FECHA DATUM	DESCRIZIONE INTERVENTO INTERVENTION DESCRIPTION INTERVENTION DESCRIPCIÓN INTERVENCIÓN WARTUNGSBESCHREIBUNG	FIRMA OPERATORE OPERATOR'S SIGNATURE SIGNATURE OPÉRATEUR FIRMA INSTALADOR UNTERSCHRIFT

DICHIARAZIONE DI CONFORMITÀ

Produttore: RIVACOLD S.r.l.
Indirizzo: Via Sicilia 7, 61020 Montecchio (PU), Italia.

Con la presente la **Rivacold S.r.l.** dichiara che la seguente macchina MX-SX
è conforme alla direttiva **97/23 CE** ed è stata sottoposta alla procedura di valutazione di conformità

- Cat 0 escluse in base articolo 3.3
- Cat I Modulo A (controllo di fabbricazione interno)
- Cat II ModuloA1 (controllo di fabbricazione interno e sorveglianza della verifica finale), ente notificato TÜV SÜddeutschland Bau und Betrieb GmbH (0036)
- Cat III Modulo B+C1 (esame CE del tipo, comformità del tipo e sorveglianza della verifica finale), ente notificato TÜV Italia s.r.l. (0948)
- Cat IV Modulo H1
  (garanzia qualità totale con controllo della progettazione e particolare sorveglianza della verifica finale) ente notificato TÜV Italia s.r.l. (0948)

è inoltre conforme alle seguenti **direttive**:

98 / 37 CE Direttiva Macchine
89 / 336 CEE Compatibilità Elettromagnetica
73 / 23 CEE Bassa Tensione

Dovrà essere comunque valutata la conformità dell' insieme costituito dall'impianto finale; pertanto **è vietato** mettere in funzione I ns. prodotti finchè la macchina in cui saranno incorporati o di cui saranno parte non sia stata dichiarata conforme alle suddette direttive.

La seguente macchina è stata realizzata applicando le seguenti **norme**:

EN 60 204- 1	Sicurezza del macchinario – Equipaggiamento elettrico delle macchine
CEI EN 60335-1	Sicurezza degli apparecchi elettrici
CEI EN 60335-2-24	Sicurezza degli apparecchi elettrici
UNI EN 292 – 1 UNI EN 292 - 2	Sicurezza del macchinario
EN 378 – 1 prEN 378 – 2	Impianti refrigeranti e pompe di calore – Requisiti di sicurezza e ambientali

Descrizione delle attrezzature a pressione che possono comporre l'insieme e procedura di valutazione di conformità utilizzate

Descrizione	Procedura valutazione				
	art.3.3	CAT I	CAT II	CAT III	CAT IV
Compressore	-	Modulo A	Modulo D1	-	-
Ricevitore di liquido	-	Modulo A	Modulo D1	Modulo B1+D	Modulo B+D
Valvola di sicurezza	-	-	-	-	Modulo G/B+D
Pressostato di sicurezza	-	-	-	-	Modulo B+D
Separatore/riserva d'olio	-	Modulo A	Modulo D1/A1	Modulo B1+D	-
Separatore di liquido	-	Modulo A	Modulo D1/A1	-	-
Scambiatore a piastre		Modulo B+D			
Filtri a cartuccia	-	Modulo A	Modulo D1	-	-
Collettori	DN≤35mm	Modulo A	Modulo A1	Modulo B+C1	
Tubazioni	DN≤35mm	35≤DN≤108	-	-	-

La categoria dell'insieme "viene determinata in funzione della categoria più elevata delle attrezzature utilizzate senza tener conto degli accessori di sicurezza" 97/23 CE art. 10§2.b

REV 15 **Direzione generale** Alceste Vitri

DECLARATION OF CONFORMITY

Manufacturer: RIVACOLD S.r.l.
Address: Via Sicilia 7, 61020 Montecchio (PU), Italy.

Hereby **Rivacold s.r.l.** states that the refrigerating unit MX-SX as described hereby
conforms with **97/23 CE** directive and has undergone the conformity evaluation procedure as follows:

- Cat 0 is excluded according to article 3.3
- Cat I Module A (internal manufacturing control)
- Cat II Module A1 (internal manufacturing control and final test control), TÜV notified body Süddeutschland Bau und Betrieb gmbh (0036)
- Cat III Module B+C1 (CE check of the item, item in conformity with 97/23 CE directive, final check control) notified body TÜV Italia s.r.l. (0948)
- Cat IV Module H1
  (total quality guarantee with design inspection and specific surveillance of final inspection) notified body: TÜV Italia s.r.l. (0948)

It also conforms with the following **directives**:

98 / 37 CE Machine Directive
89 / 336 CEE Electro-magnetic Compatibility
73 / 23 CEE Low Tension

In any case, the conformity of the final plant should be verified. Therefore, it is forbidden to put our products on stream till when the machine in which they will be fitted or which they will be a part of is declares to e in compliance with the above directive.

And has been manufactured by following **standards**:

EN 60 204- 1	Machinery safety – Machine electrical equipment
CEI EN 60335-1	Electrical device safety
CEI EN 60335-1-24	Electrical device safety
UNI EN 292 – 1;UNI EN 292 - 2	Machinery safety
EN 378 – 1 prEN 378 – 2	Refrigerating equipment and heat pumps – safety and environmental requirements

Description of pressure components that may be part of the complete units conformity evaluation procedures in use:

Description	Evaluation procedure				
	art.3.3	CAT I	CAT II	CAT III	CAT IV
Compressor	-	Module A	Module D1	-	-
Liquid receiver	-	Module A	Module D1	Module B1+D	Module B+D
Pressure relief valve	-	-	-	-	Module G/B+D
Safety pressure switch	-	-	-	-	Module B+D
Oil separator / Oil reserve	-	Module A	Module D1/A1	Module B1+D	-
Liquid separator	-	Module A	Module D1/A1	-	-
Plate-type heat exchanger		Module B+D			
Cartridge filters	-	Module A	Module D1	-	-
Manifolds	DN≤35mm	Module A	Module A1	Module B+C1	
Piping	DN≤35mm	35≤DN≤108	-	-	-

The category of the assembly "shall be determined by the highest category applicable to the equipment concerned other than that applicable to any safety accessories" 97/23 EC art. 10 §2.b

REV 15 **Managing Director:** Alceste Vitri

DÉCLARATION DE CONFORMITÉ

Producteur: RIVACOLD S.r.l.
Adresse: Via Sicilia 7, 61020 Montecchio (PU), Italie.

Par la présente la Société Rivacold s.r.l. déclare que l'appareil MX SX:
est conforme à la directive 97/23 CE et a été soumis à la procédure d'évaluation de conformité

- Cat 0 exclues selon l'article 3.3
- Cat I Modulo A (contrôle de fabrication interne)
- Cat II Modulo A1 (contrôle de fabrication interne et surveillance de la vérification finale), organisme de notification TÜV SÜddeutschland Bau und Betrieb gmbH (0036)
- Cat III Modulo B+C1 (examen CE du type, conformité du type et surveillance de la vérification finale), organisme de notification TÜV Italia s.r.l. (0948)
- Cat. IV Module H1
  (garantie qualité totale prévoyant le contrôle de la conception et attention particulière à la vérification finale) organisme notifié TÜV Italia s.r.l. (0948)

est en outre conforme aux directives suivantes:

98 / 37 CE Directive Machines
89 / 336 CEE Compatibilité Électromagnétique
73 / 23 CEE Basse Tension

Cependant la conformité de l'ensemble formé de l'installation finale devra être évaluée ; il est par conséquent **interdit** de mettre en fonction nos produits jusqu'à ce que l'appareil où ceux-ci seront incorporés ou dont ils feront partie n'ait pas été déclaré conforme aux directives précitées.

a été réalisé en appliquant les règles suivantes :

EN 60 204- 1	Sécurité des machinas – Équipement électrique des machines
CEI EN 60335-1	Sécurité des appareiles électriques
CEI EN 60335-2-24	Sécurité des appareiles électriques
UNI EN 292 – 1,UNI EN 292 - 2	Sécurité des machines
EN 378 – 1 prEN 378 – 2	Installation de réfrigération et pompes de chaleur – Conditions de sécurité et environnementales

Description des équipements à pression pouvant former l'ensemble et procédures d'évaluation de conformité utilisées

Description	Procédure d'évaluation				
	art.3.3	CAT I	CAT II	CAT III	CAT IV
Compresseur	-	Module A	Module D1	-	-
Receveur de liquide	-	Module A	Module D1	Module B1+D	Module B+D
Vanne de sûreté	-	-	-	-	Module G/B+D
Pressostat de sûreté	-	-	-	-	Module B+D
Séparateur / Réserve d'huile	-	Module A	Module D1/A1	Module B1+D	-
Séparateur de liquide	-	Module A	Module D1/A1	-	-
Échangeur à plaques	-	Modulo B+D			
Filtre à cartouche	-	Module A	Module D1	-	-
Collecteur	DN≤35mm	Module A	Module A1	Module B+C1	
Tuyaux	DN≤35mm	35≤DN≤108	-	-	-

La catégorie de l'ensemble "est déterminée en fonction de la catégorie la plus élevée des équipements utilisés, sans tenir compte des accessoires de sécurité" 97/23 CE art. 10 §2.b

REV 15 **La Direction Générale:** Alceste Vitri

DECLARACIÓN DE CONFORMIDAD

Fabricante: RIVACOLD S.r.l.
Dirección: Via Sicilia 7, 61020 Montecchio (PU), Italia.

Con la presente la **Rivacold S.r.l.** declara que el equipo MX SX:,
está conforme a la directiva **97/23 CE** y ha sido sometida al procedimiento valoración de conformidad

- Cat 0 excluidas en base artículo 3.3
- Cat I Módulo A (control de fabricatión interior)
- Cat II Módulo A1 (control de fabricación interior y vigilancia de la verifica final), ente notificado TÜV Süddeutschland Bau und Betrieb gmbH (0036)
- Cat III Módulo B+C1(examen CE del tipo, comformidad del tipo y vigilancia de la verificación final), ente notificado TÜV Italia s.r.l. (0948)
- Cat IV Módulo H1
  (garantía de calidad total con control del proyecto y particular vigilancia de la verificación final) ente notificado TÜV Italia s.r.l. (0948)

está además conforme al las siguientes **directivas**:

98 / 37 CE Directiva Aparatos
89 / 336 CEE Compatibilitad Electromagnética
73 / 23 CEE Baja Tensión

De todos modos, habrá que valutar la conformidad del conjunto constituido por la instalación final; por lo tanto **queda prohibido** poner en funcionamiento nuestros productos hasta que el equipo en el que serán incorporados o del cual formarán parte no haya sido declarada conforme con las susodichas directivas.

ha sido realizada aplicando las siguientes **normas**

EN 60 204- 1	Seguridad del equipamiento – Equipamiento eléctrico de los aparatos
CEI EN 60335-1	Seguridad de los aparatos eléctricos
CEI EN 60335-2-24	Seguridad de los aparatos eléctricos
UNI EN 292 – 1;UNI EN 292 - 2	Seguridad del equipamiento
EN 378 – 1;prEN 378 – 2	Instalaciones refrigerantes y pompas de calor – Requisitos de seguridad y ambientales

Descripción de los instrumentos a presión que pueden pertenecer al conjunto y procedimientos de valoración de conformidad utilizados

Descripción	Procedimientos valoración				
	art.3.3	CAT I	CAT II	CAT III	CAT IV
Compresor	-	Módulo A	Módulo D1	-	-
Recibidor de liquido	-	Módulo A	Módulo D1	Módulo B1+D	Módulo B+D
Válvula de seguridad	-	-	-	-	Módulo G/B+D
Presostato de seguridad	-	-	-	-	Módulo B+D
Separador/ Reserva de aceite	-	Módulo A	Módulo D1/A1	Módulo B1+D	-
Separador de líquido	-	Módulo A	Módulo D1/A1	-	-
Intercambiador de placas	-	Módulo B+D			
Filtros en cartuchos	-	Módulo A	Módulo D1	-	-
Colector	DN≤35mm	Módulo A	Módulo A1	Módulo B+C1	
Tuberías	DN≤35mm	35≤DN≤108	-	-	-

La categoría del conjunto "se determina en base a la categoría más elevada del equipo utilizado sin tener en cuenta los accesorios de seguridad" 97/23 CE art. 10 §2.b

REV 15 **La Dirección General:** Alceste Vitri

KONFORMITÄTSERKLÄRUNG

Hersteller: RIVACOLD S.r.l.
Adresse: Via Sicilia 7, 61020 Montecchio (PU), Italia.

Hiermit erklärt die Firma **Rivacold s.r.l.** , dass die Maschine MX SX:
der Richtlinie **97/23 CE** entspricht und der Prozedur der Konformitätsbewertung unterzogen wurde.

- Kat 0 ausgenommen gemäß Art. 3.3
- Kat I Modul A (interne Produktionskontrolle)
- Kat II Modul A1 (interne Produktionskonskontrolle und Überwachung der Endkontrolle) TÜV Süddeutschiand Bau und Betrieb GmbH (0036)
- Kat III Modul B+C1 (CE-Prüfung von Typ, Typenkonformität und Überwachung der Endabnahme), mitteilende Behörde TÜV Italia s.r.l. (0948)
- Kat IV Modul H1
  (Umfassende Qualitätssicherung mit Konstruktionskontrolle und besonderer Aufsicht der Endkontrolle)
  Zulassungsstelle TÜV Italia s.r.l. (0948)

Außerdem entspricht die Maschine **MX SX** folgenden Richtlinien**:**

98 / 37 CE	Richtlinie für Maschinen
89 / 336 CEE	Elektromagnetische Verträglichkeit
73 / 23 CEE	Niederspannung

Es muss in jedem Fall die Konformität der gesamten Anlage bewertet werden; daher ist die Inbetriebnahme unserer Erzeugnisse **untersagt**, bis das Gerät, in das sie eingebaut werden, den genannten Bestimmungen entsprechend als Konform erklärt wird.

Die Maschine MX-SX wurde nach folgenden Normen produziert:

EN 60 204- 1	Sicherheit der Maschine – Elektrische Ausstattung der Maschine
CEI EN 60335-1	Sicherheit der Elektrogeräte
CEI EN 60335-2-24	Sicherheit der Elektrogeräte
UNI EN 292 – 1;UNI EN 292 - 2	Sicherheit der Maschine
EN 378 – 1 **prEN 378 – 2**	Kühlanlagen und Wärmepumpen– Sicherheitsanforderungen und Umweltbedingungen

Beschreibung der Druckbestandteile, aus denen die Maschine besteht sowie die angewndte Prozedur der Konformitätsbewertung

Beschreibung	**Prozedur der Konformitätsbewertung**				
	Art.3.3	**CAT I**	**CAT II**	**CAT III**	**CAT IV**
Verdichter	-	Modul A	Modul D1	-	-
Flüssigkeitssammler	-	Modul A	Modul D1	Modul B1+D	Modul B+D
Sicherheitsventil	-	-	-	-	Modul G/B+D
Sicherheits-Deruckwächter	-	-	-	-	Modul B+D
Ölabscheider / Ölreserve	-	Modul A	Modul D1/A1	Modul B1+D	-
Flüssigkeitabscheider	-	Modul A	Modul D1/A1	-	-
Platten-Austauscher		Modul B+D			
Filter	-	Modul A	Modul D1	-	-
Sammelrohr	DN≤35mm	Modul A	Modul A1	Modul B+C1	
Leitungen	DN≤35mm	35≤DN≤108	-	-	-

Die Baugruppe wird entsprechend "der höchsten Kategorie der betreffenden Geräte bewertet, wobei Ausrüstungsteile mit Sicherheitsfunktion nicht berücksichtigt werden. "97/23 EG Art. 10 §2.b

REV 15 **General Director:** Alceste Vitri

COD. 99212005

RIVACOLD
MASTERING COLD

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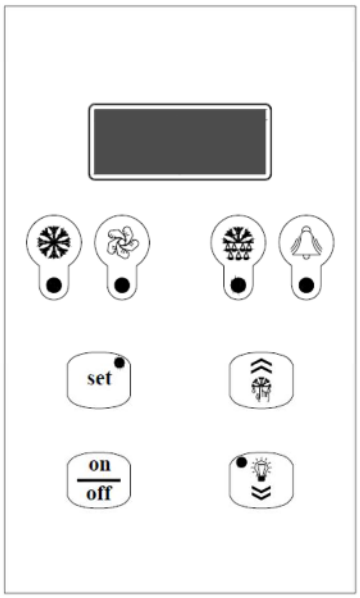
Control panel description



	Green "COMPRESSOR" LED OFF: The compressor is off LIT: The compressor is operating. BLINKING: The switch on request is pending (delays or protective devices activated)
	Green "FANS" LED OFF: The fans are off LIT: The fans are operating BLINKING: The switch on request is pending (delays or protective devices activated)
	Green "DEFROSTING" LED OFF: Defrosting is not activated LIT: Defrosting is in progress BLINKING: Manual defrosting is in progress; a defrosting request is pending (delays or protective devices activated); network synchronised (master/slave) defrosting
	Yellow "ALARM LED" OFF: No alarm is in progress LIT: A serious alarm is in progress (and alarm relay activated) BLINKING: A non-serious alarm is in progress or a serious alarm has been silenced (alarm relay deactivated)
set	"SETPOINT" key + "SETPOINT/REDUCED SET" green LED LIT: The setpoint is displayed BLINKING: The reduced set is activated ENTER" key: This is used to set the setpoint, to access the programming menu, and to view the machine status (if held down for 1 second); to enter the programming mode, this key must be held down for 5 seconds.
	"UP" key: This is used to command manual defrosting (if held down for more than 5 seconds) as well as to increase the value of the parameter being displayed and to scroll forwards through the menu list.
on off	"ON/OFF" key: This is used as a manual on-off control, to confirm a parameter value and it also allows you to return to the previous menu. To switch the machine on or off, hold this key down for more than 5 seconds.
	"DOWN" key: This is used to command the lights manually (if held down for 1 second); it also decreases the value of the parameter being displayed and scrolls back through the menu list.

2 Switching on/off

When the machine is energised, the display will read OFF and show the coldroom temperature alternately. To switch the Blocksystem on (off), hold down the "ON/OFF" key on the front of the machine for more than 5 seconds.

3 Coldroom temperature adjustment

The temperature ranges within which the Blocksystem can operate are as follows:

	Minimum	Maximum
High Temperature (HBP)	+2	+10
Medium Temperature (MBP)	-5	+5
Low Temperature (LBP)	-25	-15

The temperature adjustment setpoint can be accessed directly for display or adjustment purposes.

- Press and release SETPOINT: the display will read "SEt" (the procedure is slightly different if there are alarms in progress; see the machine status display paragraph)
- Press SETPOINT: the green SET LED will switch on and the Setpoint value will be displayed
- Press UP or DOWN to set the new value
- Press SETPOINT or ON/OFF (or wait for the 5-second timeout) to confirm the value (the SET LED will switch off and the display will read "SEt")
- Press ON/OFF (or wait for the 5-second timeout) to return to the normal display mode

4 How to vary parameters

Blocksystem operation is governed by parameters that have been stored in the memory of the electronic control unit by the manufacturer (see the parameters table). These factory settings should not be varied unless strictly necessary and in all cases, such operations are only to be carried out by qualified staff.
Parameters are not only divided by function, they are also divided according to their security/accessibility levels:

level 0 Setpoint parameters direct access (see paragraph 7.3)
level 1 frequently used parameters access without password (see paragraph 7.5)

Parameters can be varied as follows:

- from the keyboard
- via LAN network (Master/Slave)
- via Supervision network

5 How to vary level 1 parameters

- hold down SET for 5 seconds until the display reads "reg" (adjustment parameters)
- press UP or DOWN until the required menu appears on the display
- press SET to access the menu; the code number for the first parameter in the selected menu will appear
- press UP or DOWN until the required parameter appears
- press SET to view the value of the parameter
- press UP or DOWN to set the required value
- press SET to confirm the value and return to the parameters list; press ON/OFF to confirm the value and return to the menu list
- press ON/OFF to pass from the parameters list to the menu list
- press ON/OFF again to exit the editing procedure,

If no key is pressed for more than 15 seconds, any value shown on the display will be stored in the memory for the relevant parameter and there will be a forced exit from the parameters variation procedure.

6 Machine status display

- press and release SET: the display will read "SEt" or "AAL" if there are any alarms in progress
- press UP or DOWN until the required status is displayed
  - AAL alarms in progress (if present)
  - SEt setpoint
  - Pb1 coldroom temperature probe value
  - Pb2 evaporator temperature probe value
  - Pb3 probe 3 value (if present)
  - Out relay outputs status
  - InP digital inputs status
- press SET to view the value
- For alarm status, output status or input status, press UP or DOWN to scroll through the alarms in progress, the outputs or the inputs,
- press SET or ON/OFF (or wait for the 5-second timeout) to return to the status list
- press ON/OFF (or wait for the 5-second timeout) to return to the normal display mode

Code	Level	Descr.		Range	Unit	MBP	LBP	HBP
		List of **-PPS** passwords						
PPA		Parameters access password Entering a pre-set password will give access to protected parameters		0 … 255		-	-	-
		List of **-rEG** adjustment parameters						
SEt	0	Setpoint		LSE …HSE	°C [°F]	2	-18	5
diF	1	Differential temperature > setpoint + diff. -> adjustment On temperature ≤ setpoint -> adjustment Off		0.1 … 50.0	°C [°F]	2	2	2
		List of **-Pro** probe parameters						
CA1	1	Probe 1 calibration	The value assigned to this parameter is added to (positive value) or taken away from (negative value) the temperature detected by the probe	-20.0 … 20.0	°C [°F]	0	0	0
CA2	1	Probe 2 calibration				0	0	0
CA3	1	Probe 3 calibration				0	0	0

Code	Level	Descr.		Range	Unit	MBP	LBP	HBP
		List of **-CPr** compressor parameters						
Ont	1	Compressor ON time in the event of probe failure	In the event of an adjustment probe error, the compressor is enabled in cyclical mode	0 … 60	min	15	15	15
OFt	1	Compressor OFF time in the event of probe failure	with set operation and off times. In particular: Ont=0: the compressor remains off Ont>0 and OFt=0: the compressor remains on	0 … 60	min	15	15	15
dOn	1	Compressor activation delay The time, starting from the switch on request, after which the compressor is effectively activated. In the event of network control in sequential mode, this represents the activation delay from compressor to compressor		0 … 250	sec	0	0	0
dOF	1	Minimum compressor OFF time The time, starting from the moment of deactivation, for which it is not possible to restart the compressor		0 … 60	min	3	3	3
dbi	1	Delay between switch on times The time, starting from the moment of previous activation, for which the compressor cannot be restarted.		0 … 60	min	0	0	0
OdO	1	Outputs delay at power-on (compressor, fans, defrosting) This is used to delay the enabling of adjustments after the instrument has been switched on for a set amount of time. The transition from stand-by to machine activated (ON command from the keyboard) bypasses this delay		0 … 60	min	3	3	3
		List of **-dEF** defrosting parameters						
dtY	1	Defrosting type 0 = heating element: ends at temperature or after maximum safe time (timeout) 1 = hot gas: ends at temperature or after maximum safe time (timeout) For defrosting using a heating element, there is a 1 second delay between the compressor switching off and the defrosting relay being triggered		0,1		0	0	0
dit	1	Defrosting interval The maximum time (from start to start) between two consecutive defrosting cycles. When this time expires, a defrosting cycle is enabled (cyclical defrosting). The timer is reset at each defrosting request (even if not cyclical). 0 = cyclical defrosting disabled		0 … 250	h	6	6	6
dct	1	Defrosting interval count mode 0 = counts if the compressor is operating 1 = counts all the time		0,1		1	1	1
dOH	1	Defrosting start delay at power-on The time, as from when the instrument is switched on, for which any defrosting requests are frozen (manual defrosting excluded)		0 … 250	min	0	0	0
dEt	1	Defrosting timeout When the set time expires, defrosting is in any case ended, even if the defrost end temperature has not been reached, passing on to the drip phase		1 … 250	min	30	30	15
dSt	1	Defrost end temperature The probe 2 temperature above which defrosting is ended. If, at the start of a defrosting cycle, the temperature is greater than that set, no defrosting will be carried out. In the event of a probe 2 malfunction, the defrosting cycle will in any case terminate after reaching a time limit		-50.0 … 199.0	°C [°F]	15	15	10
dS2	1	Defrost end temperature for the second evaporator The probe 3 temperature above which defrosting for the second evaporator is ended. If, at the start of a defrosting cycle, the temperature is greater than that set, no defrosting will be carried out. In the event of a probe 3 malfunction, the defrosting cycle will in any case terminate after reaching a time limit. **This function is only enabled if P01=3o4, Co4=3 and CP0=2 (alarm** relay used for second evaporator defrosting and probe 3 used to detect the temperature of the second evaporator). In this case, the dripping phase will begin after the defrosting cycles of both evaporators have ended.		-50.0 … 199.0	°C [°F]	10	10	10
dPO	1	Defrosting at power-on 0 = disabled 1 = defrosting when the instrument is switched on		0.1	flag	0	0	0
		List of **-FAn** fan parameters						
FSt	1	Fans switch off temperature	probe2 ≥ FSt: fans off	-50.0 … 199.0	°C [°F]	8	-5	50
Fot	1	Fans switch on temperature	Fot ≤ probe2 < (FSt – FAd): fans on	-50.0 … 199.0	°C [°F]	-50	-50	-50
FAd	1	Fans switch on and off differential	probe2 < (Fot – FAd): fans off	1.0 … 90.0	°C [°F]	2	2	2
Fdt	1	Post-dripping time The time after the dripping phase, during which the fans remain switched off		0 … 60	min	1	2	0
dt	1	Dripping time The time after a defrosting cycle during which the compressor and the evaporator are stopped in order to favour evaporator dripping		0 … 60	min	2	2	0

Code	Level	Descr.	Range	Unit	MBP	LBP	HBP
dFd	1	Fans deactivated during defrosting 0 = fans activated (operation set from FPt) 1 = fans deactivated	0,1	flag	1	1	0
FCO	1	Fans activated with compressor off 0 = fans deactivated 1 = fans activated (operation set from FPt) 2 = fans in duty cycle operation	0 … 2		0	0	0
Fon	1	Fans ON time during duty cycle operation (FCO=2)	1 … 60	min	15	15	15
FoF	1	Fans OFF time during duty cycle operation (FCO=2)	1 … 60	min	15	15	15
		List of **-ALr** alarm parameters					
AFd	1	Temperature alarm threshold differential This sets the re-entry temperature threshold after a high- or low-temperature alarm condition	1.0 … 90.0	°C [°F]	2	2	2
HAL	1	Maximum alarm threshold Above this value (absolute or referred to the setpoint) an alarm is triggered If the reference is relative, the unmarked value is added to the setpoint	-50.0 … 199.0	°C [°F]	10	10	10
LAL	1	Minimum alarm threshold Below this value (absolute or referred to the setpoint) an alarm is triggered If the reference is relative, the unmarked value is subtracted from the setpoint	-50.0 … 199.0	°C [°F]	-10	-10	-10
PAO	1	Temperature alarm delay at power-on	0 … 10	h	4	4	4
dAO	1	Temperature alarm delay after defrost The time, starting from the end of the dripping phase, during which no alarm is signalled. In the event of contemporaneous network defrosting, the time refers to the defrosting end command	0 … 999	min	60	60	60
OAO	1	Temperature alarm delay after door closure The time, after the door is closed again and during which no alarm is signalled	0 … 10	h	0	0	0
dAt	1	Defrosting alarm timeout enabling This enables the signalling of any defrosting end due to the maximum time limit being reached (timeout). 0 = signal disabled 1 = signal enabled	0,1	flag	0	0	0
		List of **-diS** display parameters					
ndt	1	Decimal point display 0 = display without decimal point 1 = display with decimal point.	0,1	flag	1	1	1
ddL	1	Display during the defrosting phase 0 = normal display (as set from the ddd par.) 1 = freezes the temperature value displayed at the start of defrosting until the end of defrosting and the reaching of the setpoint 2 = "dF" until the end of defrosting and the reaching of the setpoint **The ddL parameter can be controlled only if the standard display (ddd par.) includes the adjustment probe** (probe 1 or network probe)	0,1,2		0	0	0
Ldd	1	Defrosting display block timeout The time, starting from the end of defrosting (end of dripping phase),after which the normal display is in any case restored	0 … 255	min	6	6	6
dro	1	°C or °F selection 0 = °C 1 = °F This selection only affects temperature measurements. The values of the parameters concerning temperature maintain their current values and therefore, they must be varied manually to adapt them to the Fahrenheit scale.	0,1	flag	0	0	0
		List of **-CnF** configuration parameters					
LOC(*)	1	Keyboard lock 0 = keyboards disabled 1 = main terminal keyboard enabled 2 = secondary terminal keyboard enabled 3 = keyboards enabled (the first to request a service has precedence until completion)	0 … 3		1	1	1
rEL	1	Software release A read-only value that identifies the software version	0.0 … 99.9		-	-	-
		List of **-LAn (**)** network parameters					
dEA	1	Supervision network address (for Master only) The address to be set on each master must take into account the number of slaves present in the LAN network preceding it: "dEA"="dEA[previous master]"+"L01[previous master]"+1 The Supervision network address for a Slave is "dEA[master]"+"L00")	1 … 199		1	1	1

(*) Note : To release the keypad, hold down "SET" and "ON/OFF" together for at least 5 seconds.

(**) Note : The "LAn" network parameter only serves in the event of MASTER/SLAVE or REMOTE CONTROL operation

8. ALARM SIGNALS

In the event of an alarm, the card normally activates the following:

- the relevant alarm code is shown on the display. In particular, the control alternates the alarm code and the temperature that is normally shown on the display; if there is more than one alarm, they are displayed in succession, alternated with the temperature
- the alarm LED is switched on
- the alarm relay is triggered.

For some alarms and signals, the LED and/or relay are not triggered. The table below gives a detailed description for each alarm and the relevant actions undertaken.

Pressing any button will deactivate the relay (if triggered) and the LED will blink, while the alarm code will remain on the display. The LED will switch off and the alarm code will disappear only when the cause behind it has ceased. The alarm codes are listed in the table below:

Code displayed	Description/Control	LED enable	Relay enable	Reset Mode
E1	**cold room probe temperature error** if a probe is used for adjustment, the compressor will be activated cyclically and defrosting cycles will be disabled; if a balanced network probe is enabled, adjustment will continue, bypassing the malfunctioning probe	yes	yes	automatic when the condition ceases
E2	**End defrostin probe g error** defrosting will end due to timeout	yes	yes	automatic when the condition ceases
E3	**3rd probe error** (condenser temperature) the associated controls are disabled	blink.	no	automatic when the condition ceases
	3rd probe error (2nd evaporator temperature) defrosting will end due to timeout	yes	yes	
	heat alarm (*) adjustment is disabled	yes	no	automatic when the condition ceases
	HP pressure switch alarm (*) adjustment is disabled	yes	no	automatic when the condition ceases
	LP pressure switch alarm (*) adjustment is disabled	yes	no	automatic when the condition ceases
E4	**repeated heat alarm** adjustment is disabled permanently	yes	yes	at switch on
E5	**repeated HP pressure switch alarm** adjustment is disabled permanently	yes	yes	at switch on
E6	**repeated LP pressure switch alarm** adjustment is disabled permanently	yes	yes	at switch on
LO	**low temperature alarm**	yes	yes	automatic when the condition ceases
HI	**high temperature alarm**	yes	yes	automatic when the condition ceases
EE	**data saving alarm** default parameters are loaded	yes	yes	at power-on or after the parameter has been stored to memory
Ec	**condenser cleaning alarm**	blink.	no	automatic when the condition ceases
Er	**network alarm** (**)	yes	yes	automatic when the condition ceases
Ed	**defrosting timeout alarm**	blink.	no	automatic at the start of the next defrost

Od	**door open timeout alarm** normal operation is enabled again	blink.	no	automatic when the condition ceases
nx	**slave x alarm** (on master only)	yes	progr.	automatic when the condition ceases
Ux	**slave x not connected** (on master only) the slave is not controlled	blink.	no	automatic when the condition ceases
u0	**master not connected** (on slave only) the slave is released from the network and operates autonomously	blink.	no	automatic when the condition ceases
dx	**slave x download failed**(on master only)	blink.	no	manual or automatic when the condition ceases

(*) There is no reading on the display.

(**) Network alarms are where, subsequent to programming, the alarm command is communicated from the master to all network devices, in the event that the alarm relay is triggered on the master itself

During operation, in specific conditions the following signals are displayed:

Code displayed	Description	Notes
OFF	unit in stand-by (operation disabled)	remains until the next ON command
dF	defrosting in progress	see par. "ddL"
dFu	defrosting not performed	displayed for 2 seconds when the defrosting command is not performed because the evaporator temperature is already above the defrosting end temperature (parameter dst)
uM	master unit	at switch on, the network configuration of the unit is displayed
uSx	slave x unit	
Cn	terminal/control connection interrupted	the terminal is not receiving data from the control

If the terminal/control connection does not operate correctly at switch on, the terminal display will read "88,8" and the LEDs will all be switched off.

Key:
T = Thermostat