

MANUALE USO E MANUTENZIONE
AEROEVAPORATORI COMPATTI
PER MOBILI REFRIGERATI

RM70

I
UK

USE AND MAINTENANCE HANDBOOK
COMPACT UNIT COOLERS
FOR REFRIGERATED CABINETS

RM70



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1. HANDBOOK PURPOSE

This handbook is issued in order to assist an operator properly to bring the unit cooler on stream , give explanations about the relevant safety norms in force within the European Community and avoid any risks that may be caused by a wrong usage.

2. NORMS FOR GENERAL USE

- For a correct and safe use of the machine, it is necessary to follow the prescriptions present in this manual as it gives instructions and information about :
 - ✓ installation
 - ✓ use
 - ✓ maintenance
 - ✓ disabling and disposal
- *The manufacturer cannot accept any liability for damages resulting from failure to follow the prescriptions and advice given in this handbook.*
- Read carefully labels placed on the machine, do not cover them for any reason and replace them in case they are damaged .
- Keep this manual carefully.
- The manufacturer may review this manual at any time, without notice.
- The unit coolers are designed for the use in industrial and commercial refrigeration application for stable cold rooms. They are not intended for any other purpose. Any other use is to be considered improper and dangerous .
- When the package is removed, please check that every part of the machine is intact; if not, contact the retailer immediately .
- It is forbidden the use of the machine in environment with presence of inflammable gas or where there is a risk of explosion.
- Do not clean the machine with direct water jet, under pressure or with improper substances .
- Do not use the machine without its protections (housing and grid)
- Do not expose the machine to heating sources
- In case of fire use a powder fire extinguisher
- Packaging material must be suitably disposed of according to the law in force

3. MACHINE IDENTIFICATION

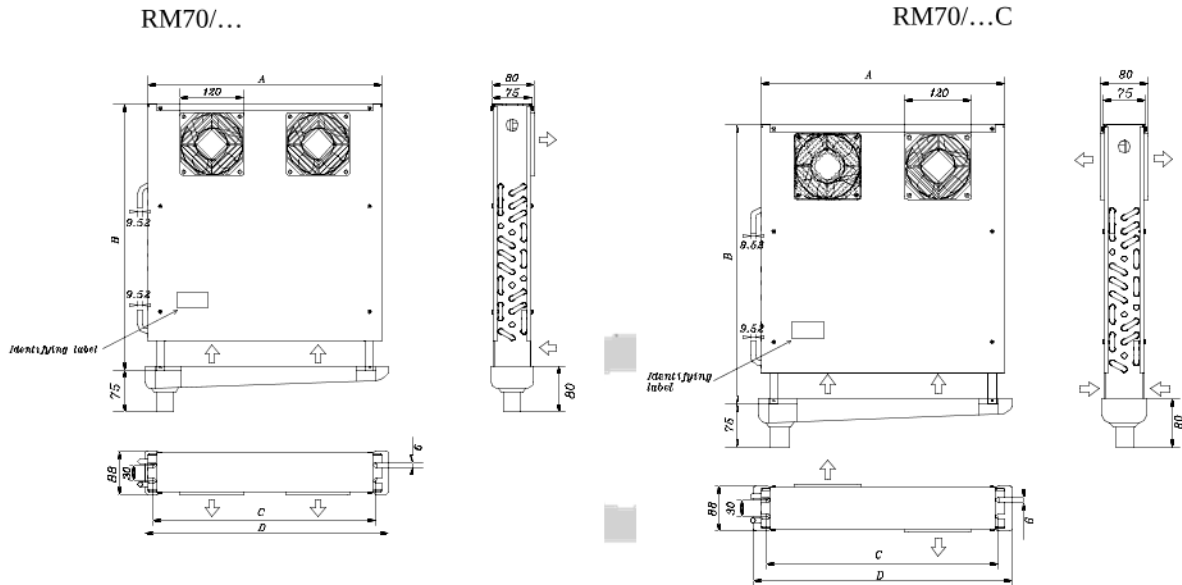
All the machines are equipped with an identifying label (the position of the label is shown in Drawing 1) where the following data are quoted :

- code
- no. of fan motors - no. of revolutions(RPM)
- Watt absorption (W)
- Ampere absorption (A)
- Power supply voltage (Volt/Ph/Hz)
- defrosting: heaters number
- Watt absorption(W)
- power supply voltage (Volt/Ph)
- refrigerant group: Group 2(*)
- PS pressure (max working pressure)
- TS temperature (min. operating temp.)
- serial number

(*) According to EN378/1 norm belong to the group 2 the following gas types: R22,R134a,R507,R404A,R407C,R410A,R410B

All RM70 range unit coolers belongs to CAT 0 in conformity with the 97/23/CE (P.E.D.) directive.

Drawing 1



Model	RM70	RM70/347	RM70/348	RM70/349	RM70/350	RM70/420
		RM70/347C	RM70/348C	RM70/349C	RM70/350C	RM70/420C
Dimensions (mm)	A	390	390	390	390	440
	B	330	355	405	455	505
	C	368	368	368	368	418
	D	402	402	402	402	456
Coil connection	inlet	9.52mm	9.52mm	9.52mm	9.52mm	9.52mm
	outlet	9.52mm	9.52mm	9.52mm	9.52mm	9.52mm
Weight (kg)		3.0	3.3	3.8	4.4	5.4

Serial number designation :

- number 1 and 2 = last two numbers of the manufacturing year
- number 3 and 4 = week of the year when the unit was manufactured
- numbers 5,6,7 and 8 = progressive number

4. INSTALLATION (general notes)

Installation must be carried out by qualified personnel having the necessary technical requirements asked for by the country where the machine is to be installed.

For moving the machine use safety anti-cut gloves and suitable hoisting device.

Check that the structure where the RM70 is going to be fixed is suitable to its weight .

Do not convey the motor fan air in order not to increase load losses.

Particular operating conditions such as cold rooms having too small height, excessive loading, obstacles to the air flow, may have an influence to the stated performances.

4. 1 **Thermostatic valve mounting (not supplied)**

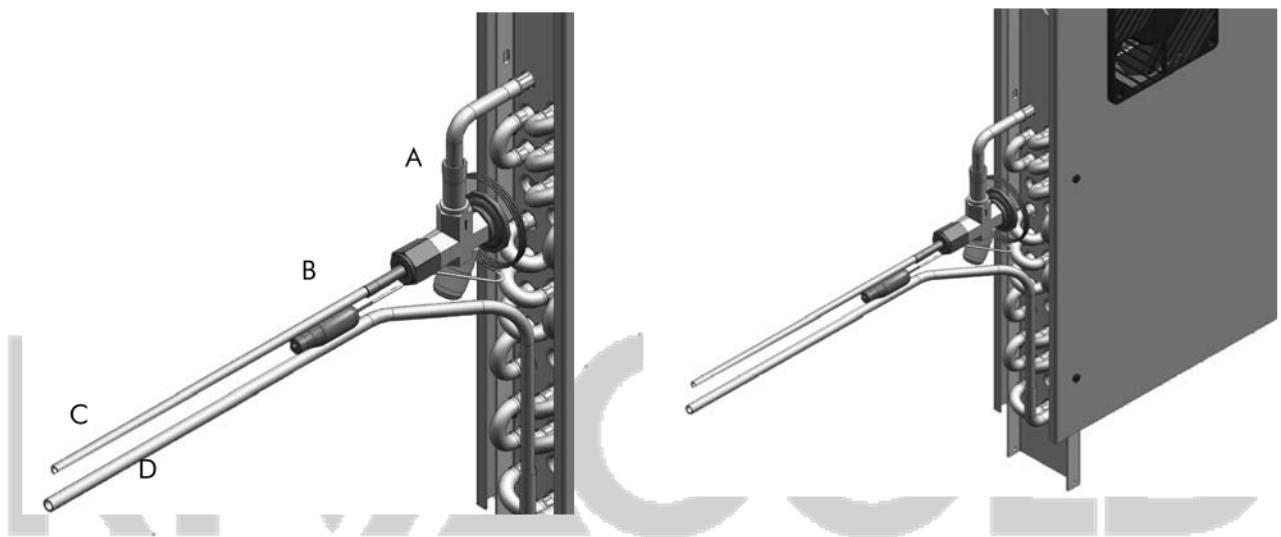
Use a thermostatic valve of the correct size

Connect the outlet of the thermostatic valve to the inlet pipe of the evaporator (Draw.2 Part.A).

Weld a pipe (Draw.2 Part.C) to the thermostatic valve inlet; this pipe must then be connected to the piping for the refrigerant used in the refrigerating system. Connect the evaporator outlet to the refrigerating system suction pipe (Draw.2 Part.D). Place the bulb of the thermostatic valve on the suction pipe (Draw.2 Part.B). Fix the bulb on the suction pipe using the metal clamp (supplied with the thermostatic valve). Insulate the suction pipe with an anti-condensation pipe.

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Drawing 2



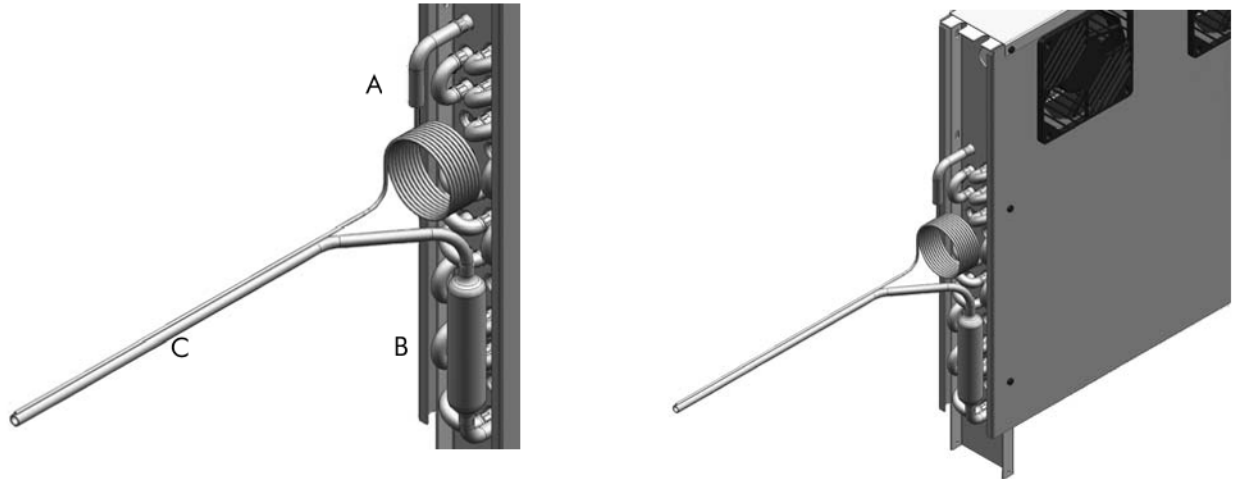
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4. 2 **Capillary assembly (not supplied):**

Use a capillary of the correct size. Connect one end of the capillary to the evaporator inlet (Draw 3 Part.A). Weld the second end of the capillary to the filter outlet on the liquid line piping. Connect a liquid separator to the evaporator outlet (Draw.3 Part.B). Connect the refrigerating system suction pipe (Draw.3 Part.C) to the opposite end of the separator. Insulate the suction pipe with an anti-condensation pipe.

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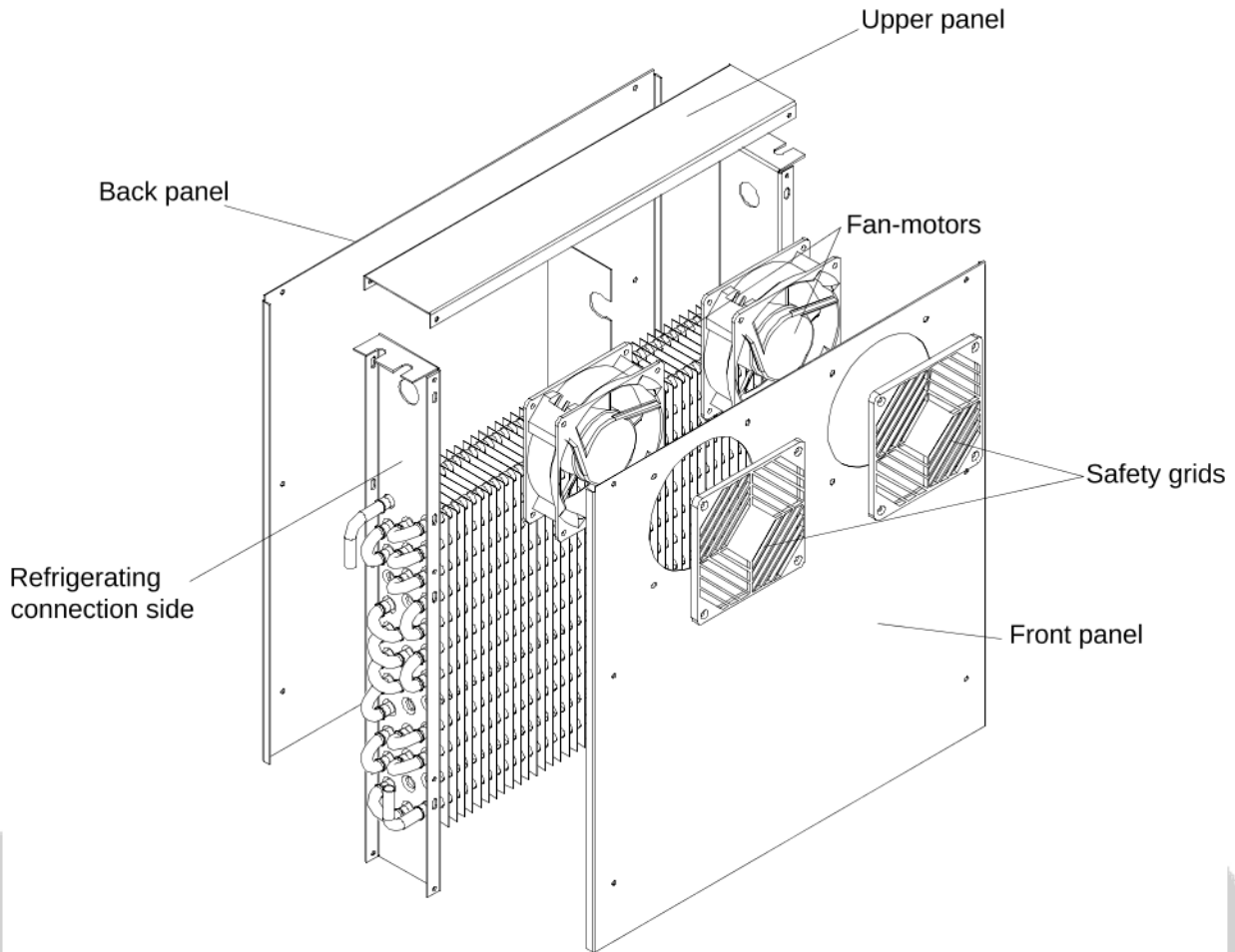
Drawing 3



5. **POSITIONING**

The unit has to be installed in vertical position, only by means of the proper fixing slots. The fixing distances between centers and the position of the fans relating to the cold room walls is shown in Drawing 1. Keep around the unit enough space for a good air cycling and for a maintenance operation in safe conditions.

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6. ELECTRICAL INSTALLATION

The wiring must be carried out by qualified personnel having the necessary technical requirements asked for by the country where the machine is to be installed.

- Provide for proper protection systems on the power supply line and check that the voltage corresponds to that quoted on the label placed on the unit (allowed tolerance $\pm 10\%$ of the rated tension).
- The law requires that the unit is earthed: therefore it is necessary to connect it to an efficient earthing equipment. No liability whatsoever can be accepted if the above instruction requirement is not complied with or if the electrical plant to which the unit is to be connected is not made by following the law in force.

6. 1 Electrical connection

Connect the cables of the fan motors to the electrical panel powering the refrigerating system. All models have fan motors that are powered at 230V/1Ph/50Hz;

Model		RM70/347 RM70/347C	RM70/348 RM70/348C	RM70/349 RM70/349C	RM70/350 RM70/350C	RM70/420 RM70/420C
Fan motors	nxømm	2x114	2x114	2x114	2x114	2x114
Fan motor absorption	A	2x0.12	2x0.12	2x0.12	2x0.12	2x0.12
	W	2x15	2x15	2x15	2x15	2x15

The fan motors are equipped with an internal protection system with automatic cutout. In case there is the need of fitting a regulation system of fan motor number of revolutions , check that it is suitable for the fan motor itself .

7. **TECHNICAL DATA**
 RM70 unit coolers are equipped with axial fan motors which are not suitable for additional air pressure drops
 The heat exchanger is made of copper-aluminium; therefore it is not suited for being used in aggressive ambient.

UK 8. **MAINTENANCE AND CLEANING**
 Maintenance and cleaning have to be carried out by qualified technical personnel only .
 Before any intervention make sure that the electrical feed is disconnected from the mains.

- Visually check the refrigerating circuit completely, also inside the machines, in order to detect refrigerant leaks, that are also put in evidence by traces of lubricant oil. Make a fast intervention and further check in case of doubt . **(every four month)**
- Periodically clean the unit in order to avoid deposits of toxic substances. The use of water and soap is recommended and avoid using solvents , aggressive agents , abrasive or ammonia-based materials.
- **In the event that machine parts need replacing, they have to be replaced by items exactly the same to the originals ones**

Important: once the maintenance is accomplished, replace all safeties previously removed (housing and grid).

9. **DISPOSAL**
 In case the machine is to be disabled , it is necessary to disconnect it from the mains. The gas inside the plant must not be dispersed in the environment.

10. **FAILURES : Causes – solutions**

<u>Problem</u>	<u>Possible cause</u>	<u>solution</u>
Iced Evaporator	Defrosting time too short	Increase defrosting time.
	Time Interval between two defrostings too long	Increase defrosting cycles. Check the possible presence of squashed pipes
	Dripping time not long enough	Check the set dripping time.
	Air infiltration through the door which is too frequently opened	Reduce the door opening frequency and eliminate possible fissure
	Burnt electrical heaters.	Replace the faulty heaters .
Iced evaporator only near the thermostatic valve	The refrigerant inflow to the evaporator is reduced .	Check the size of the thermostatic valve.
	The orifice of the thermostatic valve is too little.	Increase the orifice diameter
	High Overheating.	Check the temperatures and operate on the valve
Damaged evaporator	Deformed fins	Straighten the fins with a comb .
Blocked fan motors	Fan motor breakdown.	Replacement.
	Mains Tension lower than the allowed limits.	Check the tension value by a voltmeter .

11. **OPTIONAL ITEMS**

Drip tray
 Used to collect condensation water

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 l'aerorevaporatore a soffitto **serie RM70**, è conforme alle seguenti **direttive**:

98 / 37 CE Direttiva Macchine
73 / 23 CEE Bassa Tensione

è stato realizzato 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

Si precisa che gli **scambiatori di calore aria- gas** prodotti dalla Rivacold s.r.l. sono stati progettati, costruiti e collaudati in accordo alle disposizioni riguardanti la sicurezza delle attrezzature sottoposte a pressione disposte dalla **direttiva 97/23/CE (Pressure Equipement Directive)**.

In particolare si evidenzia che:

- Tutti gli **evaporatori** a catalogo Rivacold rientrano nella Cat 0 (Articolo 3.3, vedi tabella 7);
- La **pressione massima ammissibile (PS)** è 25 bar;
- I **fluidi** per i quali gli scambiatori sono predisposti appartengono al **gruppo 2**.

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DECLARATION OF CONFORMITY

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

Rivacold s.r.l. declares hereby that **ceiling unit coolers of RM70 range conform with** the following directives :

98 / 37 CE Machine Directive
73 / 23 CEE Low Tension

and were manufactured in conformity of the following **norms**:

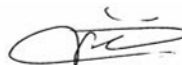
EN 60 204- 1	Machinery safety - Machinery electrical equipment
CEI EN 60335-1	Electrical device safety
CEI EN 60335-2-24	Electrical device safety
UNI EN 292 – 1 UNI EN 292 - 2	Machinery safety
EN 378 – 1 prEN 378 – 2	Refrigerating equipment and heat pumps – Safety and environmental requirements

It is also stated that all air-gas heat exchangers manufactured by Rivacold s.r.l. have been designed, manufactured and tested in conformity with provisions of 97/23/CE directive (Pressure Equipment Directive) concerning the safety of equipment under pressure.

In particular it is to point out that:

- All **evaporators** in Rivacold catalogue are of Cat 0 (Article 3.3, see table 7)
- The **maximum pressure allowed (PS)** is 25 bar;
- **The fluids** which the heat exchangers are designed for belong to the **group 2**

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