

BROCHURE

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Space Aqua XF

Installation
Operation
Commissioning
Maintenance



Contents

1. Introduction	5
2. Operation limits	5
3. Technical characteristics	6
4. Possible types of assemblies	7
5. Safety advice.....	8
6. Unit identification.....	8
7. Transport.....	9
Gravity centre coordinate	9
8. Location and assembling	10
Location designation	10
Minimum free space.....	10
Anchorage for antivibrators	11
Sound levels.....	12
9. Checking before commissioning	13
Electrical connections	13
Checks in the centrifugal fans	14
Plug-fan checks (optional).....	15
Air ducts connections	15
Condensate drain connection	15
Hydraulic connections	16
10. Options	18
Filters	18
Stop-drop	18
Hot water coil	18
Electrical heater	19
Damper cover.....	19
Gas Burner.....	20
11. Safety elements	20
Low pressure pressostat	20
High pressure pressostat	20
Liquid receiver safety valve.....	20
Safeties at the compressor	20
Pre-assembly frames (optional)	20
Refrigerant anti-freeze safety device	20
Water circulation control.....	20
Main door switch	20
Automatic switch in the control circuit	21
Magnetothermals for line protection.....	21
Anti-fire safety	21
Condensation/evaporation pressure control	21
Protection of the electric panel (optional).....	21
Clogged filter detector (optional)	21
Air flow control (optional).....	21
Smoke detector (optional).....	21
Air quality probe (optional)	21
12. Commissioning.....	22
Checks prior to commissioning	22
Operational checks	23
Possible problems at commissioning	23
13. Maintenance.....	24
14. Control and analysis of breakdowns.....	27



Compact water-air rooftop units



Cooling capacity: 106,8 to 183,1 kW
Heating capacity: 121,8 to 226,6 kW

1. INTRODUCTION

The **Space Aqua XF** cooling units and heat pumps are autonomous water-air units with a compact monoblock, horizontal rooftop design.

They are equipped with centrifugal fans, plate exchangers, hermetic scroll compressors and electronic control with microprocessors, components optimised for the R-410A refrigerant.

These units have been designed for the air conditioning of large surface areas used for business or industry. They are quick to install and operate reliably. A vast number of options meet numerous operating demands.

■ Space Aqua RXF Series

Autonomous water-air **cooling** units with a compact horizontal rooftop construction.

■ Space Aqua IXF Series

Autonomous reversible water-air **heat pump** units with a compact horizontal rooftop construction.

After manufacturing, all units are charged with refrigerant and are tested at the factory, verifying the correct operation of all their components within the operating range for which they are intended.

The units comply with standards: EN 60-204 - EN 378-2, and directives: Machines 2006/42 CE - CEM 2004/108/CE - DBT 2006/95 CE - DESP 97/23 CE (Category 2).

Those in charge of the installation, start-up, use, and maintenance of the unit must know the instructions contained in this brochure and the specific technical characteristics of the installation place.

2. OPERATION LIMITS

Conditions		Cooling	Heating
Air inlet	Minimum	14°C WB	10°C
	Maximum	22°C WB	27°C
Water	Minimum	5°C ① ③	5°C ② ③
	Maximum	55°C ①	35°C ②

① Temperature of outlet water.

② Temperature of inlet water.

③ Glycol water must be used if there is a risk of the plate exchanger freezing.



Compact water-air rooftop units

Space Aqua XF

3. TECHNICAL CHARACTERISTICS

Space Aqua XF		415	420	480	485	540	600	650	720
Cooling capacities	Cooling capacity ① (kW)	106,82	109,07	115,29	122,32	136,53	156,54	162,26	183,05
	Power input ③ (kW)	23,52	21,44	26,06	24,03	28,85	31,48	33,57	41,19
	EER performance	4,54	5,09	4,42	5,09	4,73	4,97	4,83	4,44
Heating capacities	Heating capacity ② (kW)	121,84	125,86	134,31	139,45	160,45	181,33	193,99	226,85
	Power input ③ (kW)	27,81	25,99	32,27	29,94	34,75	38,11	39,22	49,89
	COP performance	4,38	4,84	4,16	4,66	4,62	4,76	4,95	4,55
Outdoor circuit	Nominal water flow (m³/h)	22,9	23,1	24,8	25,4	29,0	32,0	34,0	40,0
	Pressure drop (m.w.c.)	11,5	11,6	11,3	11,6	11,8	5,7	7,0	11,1
	Type of hydraulic connections	Gas threaded							
	Diameter of connections	M 2"	M 2 1/2"	M 2"	M 2 1/2"				
Indoor circuit outlet fan	Nominal air flow (m³/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000
	Available static pressure (mm.a.c)	12,5	12,5	15,0	15,0	15,0	15,0	17,5	17,5
	Type	Centrifugal							
	Number / no. turbines	2 / 2							
	Motor output (kW)	2 x 2,2	2 x 1,5	2 x 2,2	2 x 1,5	2 x 2,2	2 x 3	2 x 4	2 x 4
	Power input (kW)	2,72	2,04	2,94	2,18	2,88	4,06	5,15	6,21
	Speed (r.p.m.)	688	535	717	554	597	639	654	677
Compressor	Type	Scroll							
	Number of compressors	2						4	
	Number of stages	2						4	
	Number of circuits	2						2	
	Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC							
	Volume of oil (l)	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	4 x 3,3	4 x 6,2
Electrical characteristics	Electrical power supply	400 V / III ph / 50 Hz (±10%)							
	Power supply	3 Wires + Ground							
Maximum absorbed current	Compressors (A)	70,3	70,3	79,6	79,6	91,1	102,6	100,4	122,0
	Indoor fans (A)	10,0	7,1	10,0	7,1	10,0	13,8	18,0	18,0
	Control (A)	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
	Total (A)	82,1	79,2	91,4	88,5	102,9	118,2	120,2	141,8
Refrigerant	Type	R-410A							
	Global warming potential (GWP) ④	1.720							
	Load (kg)	35,0	31,7	35,5	32,0	33,0	34,0	34,0	40,0
Dimensions	Length (mm)	3.326	4.816	3.326	4.816	4.816	4.816	4.816	4.816
	Width (mm)	2.205	2.205	2.205	2.205	2.205	2.205	2.205	2.205
	Height (mm)	1.873	1.573	1.873	1.573	1.573	1.573	1.873	1.873
Weight	(kg)	1.514	1.723	1.580	1.773	1.853	1.927	2.055	2.117
Condensate outlet Ø		1 1/4" adaptor							

① Cooling capacity calculated in accordance with the UNE-EN-14511 standard given for inlet/outlet water temperature conditions of 30/35°C and indoor air temperature of 27°C (19°C WB).

② Heating capacity calculated in accordance with the UNE-EN-14511 standard given for inlet water temperature conditions of 15°C and indoor temperature conditions of 20°C.

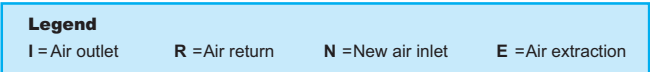
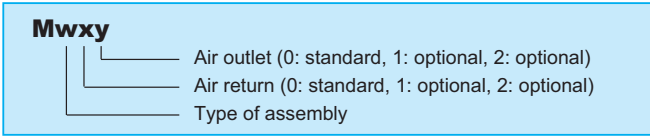
③ Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the UNE-EN-14511 standard.

④ Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

4. POSSIBLE TYPES OF ASSEMBLIES

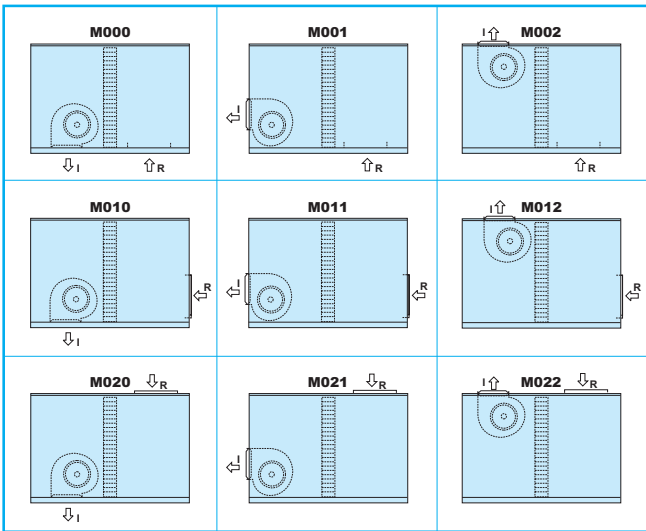
Configuration options

(Based on the circulation of indoor air)



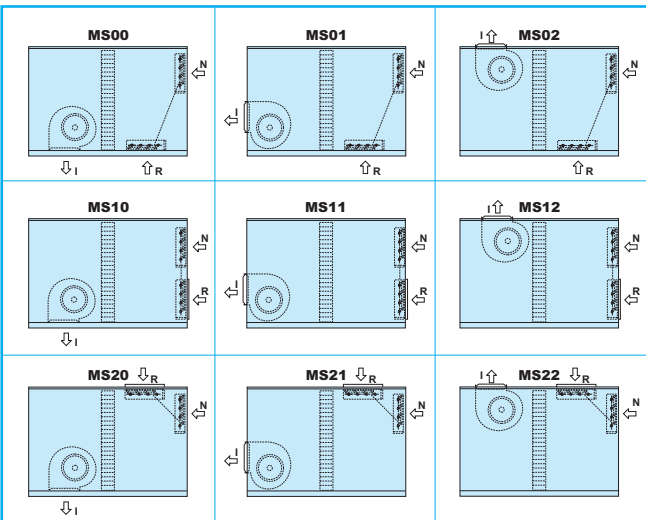
Standard Assembly

- **MO Assemblies:** Change of outlet and/or return air position in the indoor circuit.

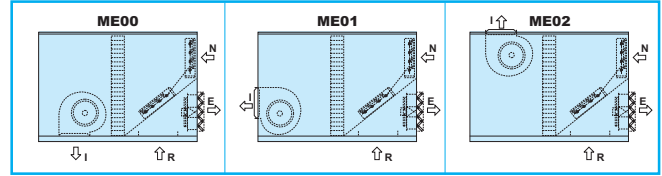


Assemblies with mixing box and free-cooling

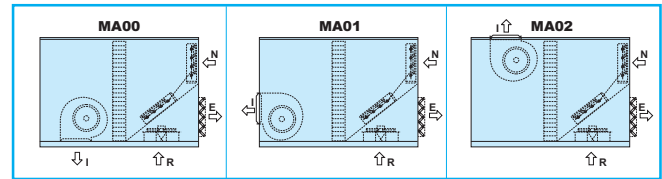
- **MS Assemblies:** New air intake with damper, interlocked with return damper (2-way mixing box).



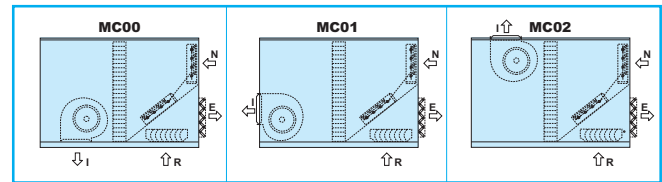
- **ME Assemblies:** Axial air extraction fan (3-way mixing box).



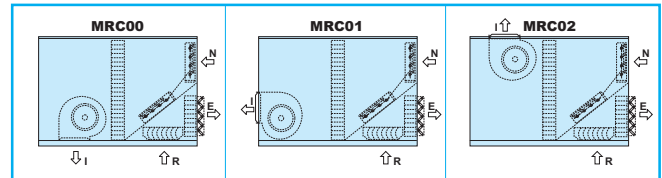
- **MA Assemblies:** Axial return and air extraction fan (3-way mixing box).



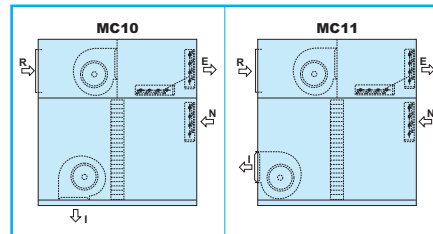
- **MC0 Assemblies:** Lower electronic return plug-fan (3-way mixing box).



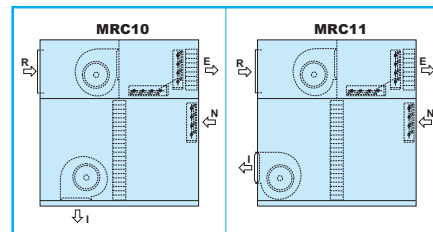
- **MRC0 Assemblies:** Lower electronic return plug-fan (3-way mixing box) + cooling recovery circuit.



- **MC1 assemblies:** Centrifugal return fan in top box (3-way mixing box).



- **MRC1 Assemblies:** Top box centrifugal return fan (3-way mixing box) + cooling recovery circuit.



5. SAFETY ADVICE

To avoid any risk of accident during installation, commissioning or maintenance, it is obligatory to take into consideration the following specifications for the units: refrigerated circuits under pressure, refrigerant presence, electrical voltage presence and implantation place.

Because of all of this, only qualified and experienced personnel can perform maintenance tasks or unit repairs.



It is required to follow the recommendations and instructions in the maintenance brochures, the labels, and the specific instructions.

It is necessary to comply with the norms and regulations in effect. It is recommended to consult the competent authorities regarding the applicable regulations for users of units or components under pressure. The characteristics of these units or components are included on the plates of characteristics or in the regulatory documentation provided with the product.



The compressor and line surfaces can reach temperatures above 100°C causing burns to the body. In the same fashion, under certain conditions these surfaces can reach very cold temperatures that can cause freezing risks.



Use safety goggles and gloves on the job. Be careful with sharp parts or elements in the unit.



Caution: Before intervening in the unit, verify that the main power to the unit is cut off. An electric shock can cause personal damage.



Note: In order to recycle these units follow the stipulations of Directives (EC) No. 96/2002 and No. 108/2003 regarding electrical and electronic equipment and the management of the resulting waste.

Refrigerant leaks:

A periodical check must be performed for refrigerant gas leaks as per Regulation (CE) N°842/2006 over **certain greenhouse effect fluoride gases**.

These units work with refrigerant gas **R-410A**. This fluid is used up to a maximum service pressure of 42 bar.

Components of the R-410A	R-32	R-125
Chemical formula	CH2F2	CHF2CF3
Weight ratio	50%	50%
Unitary global warming potential (GWP)	650	2.800
Global warming potential (GWP)	1.720	

In case of a leak:

- Toxicity: According to ASHRAE 34, R-410A belongs to the A1/A1 group, i.e. with high safety both in the mix and also in the case of a leak.
- Although it is not toxic, in case of a leak to atmospheric pressure the liquid phase evaporates. The resulting vapours are heavier than air and can displace the technician local air. In case of an accidental discharge in a closed enclosure, fans must be used to eliminate said vapours.
- Although the R-410A is not flammable, when in contact with a flame or hot spot it can decompose in fluorhydric acid HF and fluophosgene COF₂ highly toxic and corrosive.
- To detect leaks, an electronic leak detector, an ultraviolet lamp or soapy water must be used. Flame detectors do not help.



Important: Immediately repair any refrigerant leak, using a recovery unit specific for R-410A that avoids a possible mixture of refrigerants and/or oils.

Natural or propane gas leaks (optional burner):

- Do not operate electric switches or other objects which could cause sparks.
- Improve the ventilation if located in a closed area.
- Close the gas supply valve.
- Ensure that there is no one in the vicinity of the leak and request the intervention of site staff.

6. UNIT IDENTIFICATION

All units bear, legibly and indelibly, a data plate located in a prime space, as appears in the attached image: Check that this plate matches the correct model.

Ref. Produit\Item Nbr	Designation\Description	
Order Nbr	Model	
An.Year	No Serie\Serial Nbr \ No Produit	Manufacturing Nbr
Refrigerant	kW Absorbee\input kW	Poids\Weight
Refrigerant type	Weight in operation	
Refrigerant kg	Tension\Voltage	Temperature Maxi C
	Line voltage	
BP Mini PSMIMOP	Intensité\Current A	IP
Low pressure		
HP Maxi PSMIMOP	Int.. Kit Elect.	No CE
High pressure	Electrical kit current	
<div style="text-align: center;"> <p>30, av JeanFalconnier 01350 CULOZ Tel : 33(0)4 79 42 42 42</p> </div> <div style="text-align: right;"> <p>Made in Spain</p> </div>		

Check the condition of the equipment upon delivery.

Check that the details on the label, the packing and the data plate match the order. If equipment has been damaged, or there is a shortfall in delivery, notify accordingly.



Note: The serial number must be used in all communications regarding the unit.

With the gas burner option, the unit identification is completed with a second data plate referring to said option. The data featured on this plate are shown below:

GAS INFORMATION			
COUNTRY	<input type="text"/>	GAS CONSUMMATION	<input type="text"/> m3/h
GAS	<input type="text"/>	GAS PRESSURE	<input type="text"/> mbar
GAS CATEGORY	<input type="text"/>	TYPE	<input type="text"/>
PIN	<input type="text"/>	WO	<input type="text"/>

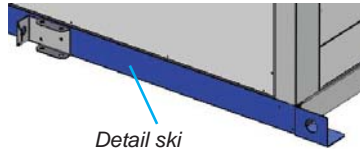
CE certification number of unit with gas burner

7. TRANSPORT

The unit must be handled with care to avoid transport damage. Thus we recommend:

- For transport in a container, one must be selected that has an easy load and unload to the installation location.
- Do not dispose of the pallet or the packaging materials until the unit is in its final location.

Note: the skis for closed container (models 415 to 720, except with MC1 and MRC1 assemblies) can be removed by unscrewing them from the unit struts.

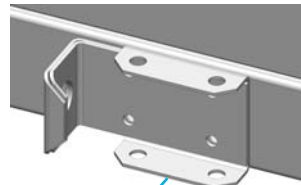


- The unit must be lifted and fixed with care and without inclination (maximum inclination 15°), since it could harm its operation.

Note: please see the gravity centre coordinates of each model stated in the following page.

- The unit can be handled with a forklift truck, taking all necessary precautions to avoid sliding of the unit on the truck's fork.

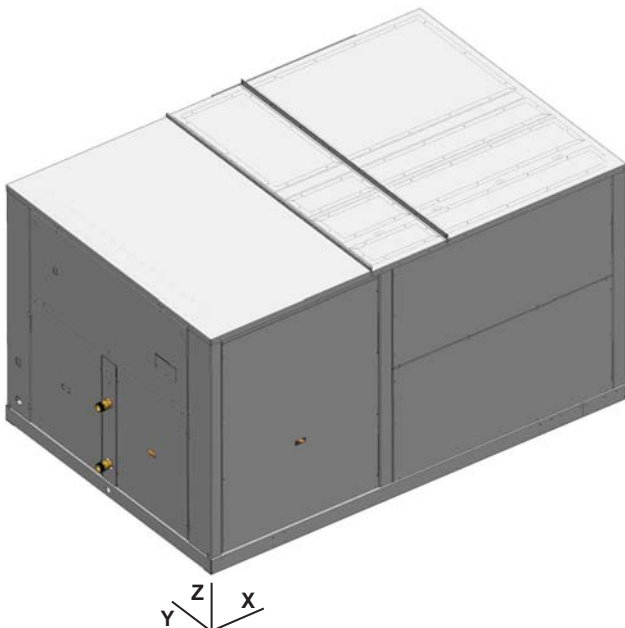
- For the transport and lifting to the roof using a crane cloth slings with rings will be used, with the appropriate resistance, separated by a strut to avoid damaging the casing.



These slings are attached to the grips on the strut.

- **Attention:** Ensure that the units with lifting grips are properly tightened before attaching the slings.

After the placing of the unit, it is recommended to remove the grips as they can be a hindrance for maintenance. Put them back in case of unit transport.



Gravity centre coordinate

Space Aqua XF	M0 Assembly			
	Gravity centre			Weight (kg)
	X(mm)	Y(mm)	Z(mm)	
415	1.544	1.028	695	1.514
420	2.360	1.020	557	1.723
480	1.525	1.012	674	1.580
485	2.347	1.009	540	1.773
540	2.342	1.043	533	1.853
600	2.283	1.029	531	1.927
650	2.136	1.033	650	2.055
720	2.128	1.035	656	2.117

Space Aqua XF	MS Assembly				MA / ME Assembly			
	Gravity centre			Weight (kg)	Gravity centre			Weight (kg)
	X(mm)	Y(mm)	Z(mm)		X(mm)	Y(mm)	Z(mm)	
415	1.586	1.072	700	1.590	1.623	1.105	684	1.667
420	2.425	1.068	580	1.816	2.467	1.053	545	2.044
480	1.567	1.055	681	1.656	1.603	1.087	666	1.733
485	2.414	1.058	564	1.865	2.452	1.045	527	2.052
540	2.407	1.090	556	1.945	2.446	1.078	521	2.125
600	2.347	1.074	554	2.019	2.387	1.062	518	2.247
650	2.231	1.009	690	2.167	2.240	1.068	638	2.459
720	2.222	1.106	696	2.230	2.234	1.071	643	2.520

Space Aqua XF	MC0 Assembly				MRC0 Assembly			
	Gravity centre			Weight (kg)	Gravity centre			Weight (kg)
	X(mm)	Y(mm)	Z(mm)		X(mm)	Y(mm)	Z(mm)	
415	1.661	1.140	670	1.765	1.623	1.173	649	1.912
420	2.467	1.045	535	2.070	2.395	1.003	518	2.230
480	1.642	1.123	654	1.831	1.605	1.155	635	1.978
485	2.452	1.037	517	2.120	2.382	995	501	2.278
540	2.446	1.071	511	2.200	2.527	1.072	496	2.357
600	2.387	1.055	508	2.273	2.476	1.056	493	2.428
650	2.240	1.058	625	2.463	2.308	1.062	607	2.664
720	2.234	1.061	631	2.524	2.304	1.065	617	2.731

Space Aqua XF	MC1 Assembly				MRC1 Assembly			
	Gravity centre			Weight (kg)	Gravity centre			Weight (kg)
	X(mm)	Y(mm)	Z(mm)		X(mm)	Y(mm)	Z(mm)	
415	1.720	1.078	958	1.899	1.623	1.101	945	2.017
420	2.732	1.120	814	2.240	2.770	1.115	819	2.391
480	1.700	1.063	938	1.965	1.660	1.086	926	2.083
485	2.732	1.110	801	2.289	2.771	1.106	806	2.442
540	2.717	1.141	789	2.369	2.764	1.136	796	2.524
600	2.690	1.115	779	2.443	2.736	1.111	787	2.600
650	2.430	1.144	932	2.550	2.477	1.142	924	2.719
720	2.433	1.136	935	2.632	2.484	1.134	931	2.808

8. LOCATION AND ASSEMBLING

Location designation

Before moving the unit, make sure that all panels are fastened in place. It is important to lift and lower with care.

When choosing the location, whatever may be the selected fashion, the following precautions have to be taken into consideration:

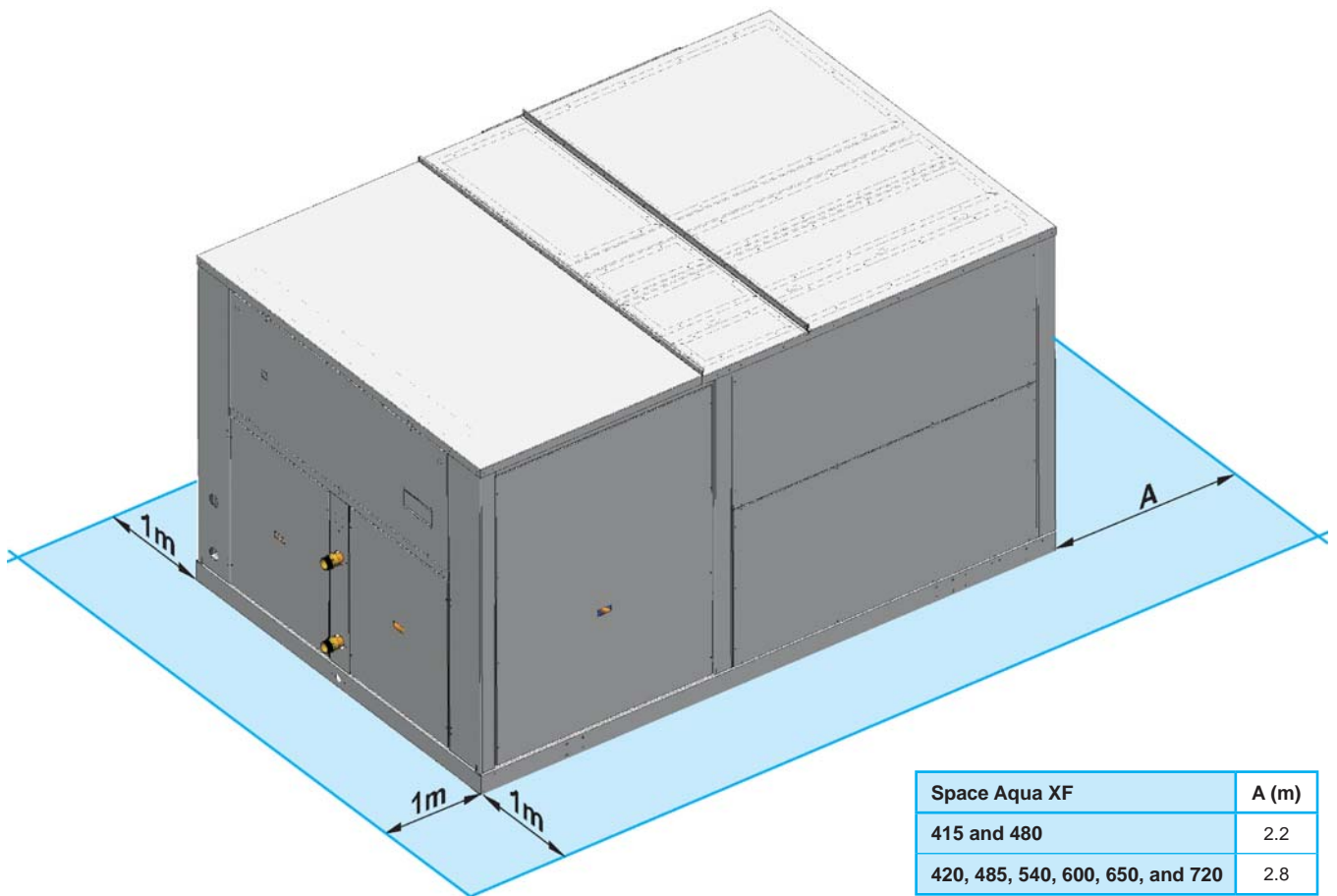
- It is mandatory to comply with norm UNE-EN 378-3 on Safety and Environmental Requirements. Part 3: "In situ" installation and protection to people.
- The area where the unit will be located must be perfectly accessible for cleaning and maintenance operations (check minimum free space for maintenance). Leave enough space for air circulation around the unit.
- Foresee appropriate bumping devices in all the installation so that

noise and vibration transmission is avoided (refer to the Anchoring for antivibration section).

- It is necessary to check that the structure supports the unit's weight (please see weight in the chapter "Transport" which includes the centres of gravity).
- Since the unit is designed to work outdoors, some specific installation norms must be followed:
 - The chosen location must not flood and must be above the average height the snow reaches in that region.
 - All models can be installed on the floor or on a brick frame or steel profile (see the preassembly frames in the "Options" chapter). In any case, check that the unit is perfectly level.

Minimum free space

Minimum free space around the unit for commissioning and maintenance operations



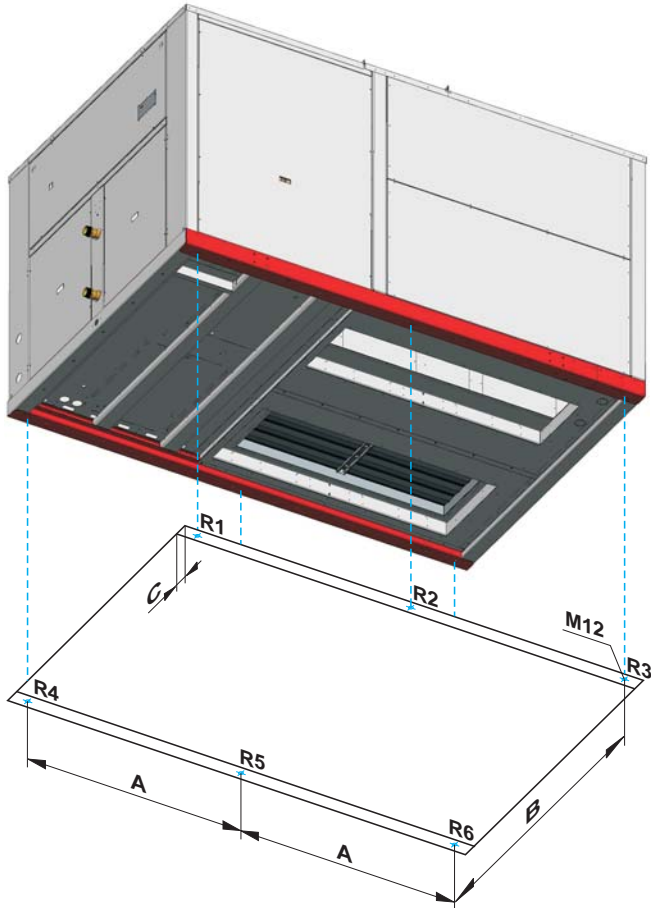
Space Aqua XF	A (m)
415 and 480	2.2
420, 485, 540, 600, 650, and 720	2.8



Compact water-air rooftop units

Anchorage for antivibrators

Space Aqua XF	A (mm)	B (mm)	C (mm)
415 / 480	1.545	2.095	97
420 / 485 / 540 / 600 / 650 / 720	2.290	2.095	97



Space Aqua XF	MA/ME Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	227	399	206	229	400	207	1.667
420	269	506	295	237	474	263	2.044
480	247	419	213	238	411	205	1.733
485	276	510	296	239	473	258	2.052
540	276	517	294	260	501	277	2.125
600	312	553	302	283	524	273	2.247
650	379	603	289	352	576	262	2.459
720	389	616	293	363	591	268	2.520

Space Aqua XF	MC0 Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	220	412	219	241	433	240	1.765
420	275	515	302	237	477	264	2.070
480	239	433	226	251	445	238	1.831
485	288	530	308	244	486	264	2.120
540	288	538	307	266	516	285	2.200
600	318	562	308	284	527	274	2.273
650	383	608	293	348	573	258	2.463
720	393	621	297	360	588	264	2.524

Space Aqua XF	MRC0 Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	240	437	215	283	480	258	1.912
420	329	570	323	258	499	252	2.230
480	260	457	222	293	490	256	1.978
485	342	585	329	264	507	251	2.278
540	288	576	349	265	553	326	2.357
600	316	600	352	280	564	316	2.428
650	393	655	335	359	621	301	2.664
720	403	671	341	370	638	308	2.731

Space Aqua XF	M0 Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	244	381	186	208	345	150	1.514
420	256	435	238	211	390	193	1.723
480	264	401	193	218	356	148	1.580
485	269	451	245	216	398	193	1.773
540	272	461	245	237	426	210	1.853
600	300	484	247	255	439	202	1.927
650	351	515	229	306	470	184	2.055
720	363	530	234	318	484	188	2.117

Space Aqua XF	MC1 Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	237	462	272	222	448	257	1.899
420	206	530	365	219	543	377	2.240
480	256	483	280	232	458	255	1.965
485	214	546	376	220	551	382	2.289
540	214	553	374	243	582	403	2.369
600	238	580	388	248	590	398	2.443
650	309	594	321	343	628	355	2.550
720	321	617	336	350	645	364	2.632

Space Aqua XF	MS Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	235	389	195	219	373	180	1.590
420	243	445	250	223	425	230	1.816
480	254	409	202	229	384	177	1.656
485	255	460	257	228	434	231	1.865
540	257	470	257	250	462	249	1.945
600	285	493	259	267	475	240	2.019
650	356	551	273	292	487	208	2.167
720	334	533	244	337	536	246	2.230

Space Aqua XF	MRC1 Assembly: Reactions in the supports (kg)						Weight (kg)
	R1	R2	R3	R4	R5	R6	
415	276	484	250	275	483	249	2.017
420	212	568	401	222	578	411	2.391
480	278	505	276	267	494	265	2.083
485	220	584	413	223	586	416	2.442
540	217	591	413	244	618	440	2.524
600	242	619	428	249	626	435	2.600
650	316	634	357	351	669	392	2.719
720	328	659	375	356	687	403	2.808



Compact water-air rooftop units

Space Aqua XF

Sound levels

The Space Aqua XF units are designed to work with a low acoustic level.

In any case, in the design of the installation the outdoor environment, the kind of building for the noise transmitted in the air and the solid elements for the vibration transmission must be taken into consideration for the acoustic radiation.

To reduce the transmissions through solid matter to the maximum, we recommend installing:

- shock absorbers between the floor or structure and the frame of the unit.
- flexible connections in the hydraulic tubes.

If necessary, an acoustic technician must commission a study.

Sound power level

Standard unit

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	81	82	82	84	84	85	85	85

Unit with centrifugal return fan in top box MC1 (optional)

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	82	83	83	84	85	85	86	87

Unit with centrifugal return fan in top box and MRC1 cooling recovery circuit (optional)

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	83	84	84	85	86	86	87	88

Note: The sound power available spectrums can be consulted in the technical brochure for the Space Aqua XF series.

Acoustic power reference: 10E-12 W, tolerance of ± 3 dB (partial load of ± 4 dB).

Sound pressure level

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

Standard unit

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	53,8	54,7	54,9	56,4	56,6	57,3	57,2	57,5

Unit with centrifugal return fan in top box MC1 (optional)

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	54,4	55,2	55,6	56,9	57,1	57,8	58,0	59,1

Unit with centrifugal return fan in top box and MRC1 cooling recovery circuit (optional)

Space Aqua XF	415	420	480	485	540	600	650	720
Total dB(A)	55,4	56,2	56,7	57,8	58,1	58,8	58,9	59,9

Note: The sound pressure level depends on the installation conditions and, as such, is only indicated as a guide. Values obtained according to the ISO 3744 standard.

9. CHECKING BEFORE COMMISSIONING



Note: Under no circumstance should the unit be started without having read the brochure completely.

Electrical connections

Installation norms

To perform the electric installation of the unit (wire intake, conductor section and their calculations, protections, etc...), refer to the information provided in this document (see the technical characteristic table), the electrical scheme included with the unit and norms in effect that regulate the installation of air conditioning units and electrical receivers. Verify that electrical power corresponds to the one on the data plate and that the voltage remains constant.



Check that the electrical connections are correct and tight (an electrical diagram is included with each unit, along with its legend).



Note: All connections in the site are the responsibility of the installer. These connections are always made as per the current regulation.



To prevent electrical shocks, make all electrical connections before energizing the unit. Check that the automatic switch is closed. Omitting this can cause personal damage. Make the ground connection before any other electrical connection.



The installer must fix line protection elements according to the effective legislation.

Electronic control

• Electronic control AVANT / AVANT+

These units have an AVANT+ electronic control as standard from the factory comprised of a main board and a TCO user terminal:

Optionally, this control can have a terminal for pGD1 maintenance that facilitates the initial scheduling of the unit, the modification of the operating parameters and the description of the alarms produced.

Recommendations for the TCO thermostat installation

From the thermostat some of the unit operation aspects are controlled: operation modes, setpoint, differential, timings... Because of this, it is very important to chose an appropriate location within the room since in it is where the unit's control probe is located. This probe must report about the environmental conditions of the occupied area.



The thermostat must be fixed at a height of 1.5 m y all possible interferences must be avoided: sun, outdoor air, internal heat sources... Mount the thermostat to the wall using the bracket, do not leave it hanging from the wire or embedding it in the wall.

• AVANT Pro electronic control

The AVANT Pro control is available for all models in the Space Aqua XF series and is mandatory with the gas burner and cooling recovery circuit options.

This control also allows overpressure with the MC0 and MC1 assemblies to be controlled.

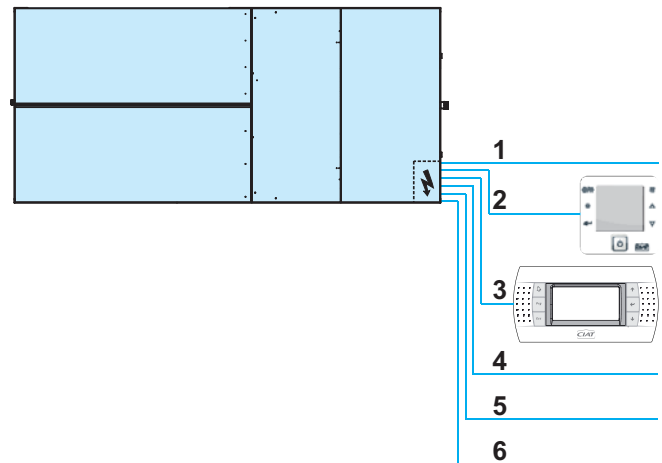
This control is comprised of an electronic control panel and a pGD1 user terminal.



This terminal can be installed over the unit electric panel accessed using a polycarbonate collapsible window or remotely with the centralised control of up to 15 units.

Note: See the specific brochures of each of the controls mentioned to get more detailed information.

Connection chart

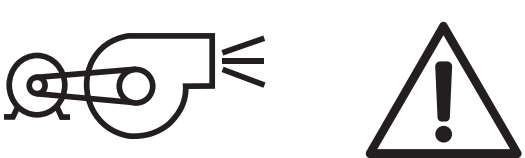


No.	Space Aqua XF	415 to 720
1	Main power supply 400 III (±10%)	3 + N
2	TCO user terminal connection ①	2 wires for supplying 230V + 1 shielded cable for communication, type AGW20/22 (1 twisted pair + drainwire + shielding)
3	pGD1 maintenance terminal connection	telephone cable 6 wires standard (RJ12 connector) (opt.)
4	Remote off/on (optional)	2 wires
5	Main alarm signal (optional)	2 wires
6	Electrical heater safety (optional)	2 wires (per stage)

① The same power supply used for powering the control board must also be used for powering the terminal.

Checks in the centrifugal fans

- Before commissioning, check the blade rotation direction and that the axis turns without strokes nor vibrations
- Once running, check the operation conditions: pressures, flows and consumptions.
- The coupling of characteristic curves of the fan and the room is very important, so that the flows and pressures provided to the duct network are as required.



ACHTUNG: VOR DER ÖFFNUNG DIESER PANEEL STROM ABSCHALTEN UND 2 MIN. WARTEN.

WARNING: BEFORE OPENING THIS PANEL SWITCH OFF THE ELECTRIC SUPPLY AND WAIT FOR 2 MIN.

ATTENTION: AVANT L'OUVERTURE DE CE PANNEAU COUPER L'ALIMENTATION ÉLECTRIQUE ET ATTENDRE 2 MIN.

ATTENZIONE: PRIMA DE APRIRE QUESTA PARETE INTERROMPERE L'ALIMENTAZIONE ELETTRICA E ASPETTARE 2 MIN.

ATENCIÓN: ANTES DE ABRIR LA PUERTA CORTAR LA ALIMENTACIÓN ELÉCTRICA Y ESPERAR 2 MIN.

V220086

• Soft starter detail (optional):

The soft starter of the outlet fan extends the time to reach its regular speed. This is mainly intended for installations with fabric ducts however is always compulsory with motors with an output of 15 kW and higher.

It is installed in the factory in the electric panel for motors up to 15kW. For larger motors it is installed next to the ventilation group.

Motor output up to 15 kW



Motor greater than 15 kW



Starter

Pulley and belt calibration

All the centrifugal motor fans in the indoor circuit, both for discharge and return with MC1 assembly (optional), are coupled with pulleys and belts.

In these fans, the following must be taken into consideration:

- The pulleys must be on the same plane, so it is important to check them with the help of a ruler or a laser aligner.
- In case they are not, remove the pulley screws, remove the pulley

and, after removing the hub pin, it can be slid over the axle (this action can be performed both in the motor as well as in the fan).

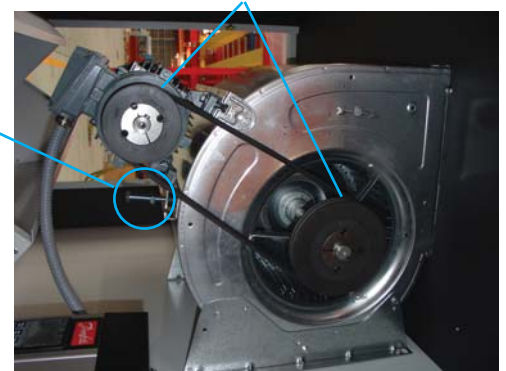
- After fixing the pulleys on the same plane, the belt tension is made by tightening the tensor screw.
- The belt tension must be checked after 24 hours of motor operation.

Attention: Before performing these operations, it is necessary to verify that the unit is disconnected from mains.

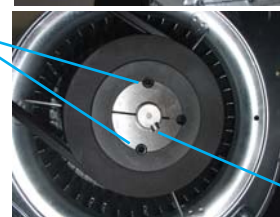
Motor less than 4 kW

Pulleys must stay on the same plane

Tensor screw



Pulley screws

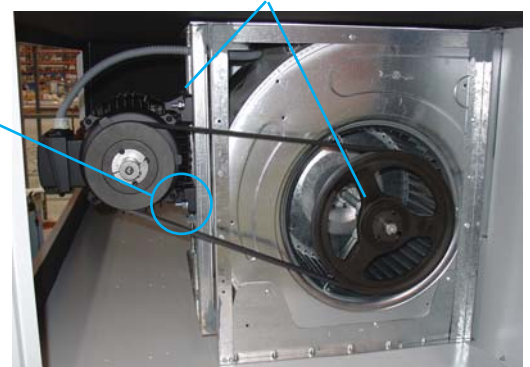


Taper pin

Motor from 4 kW

Pulleys must stay on the same plane

Tensor screw



Pulley screws

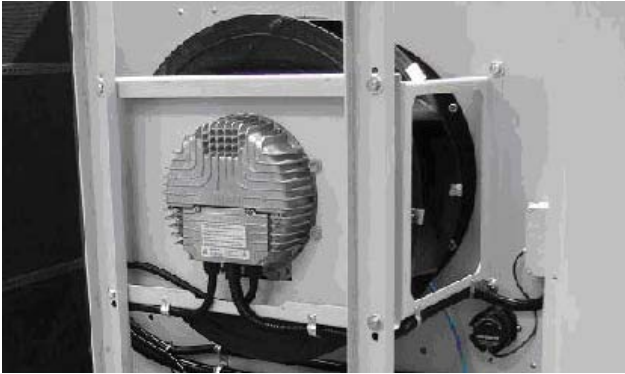


Taper pin

Note: In models 415 and 480, the support frame for the motor on the fan is replaced by the reinforcement on the fan volute.

Plug-fan checks (optional)

- The coupling of characteristic curves of the fan and the room is very important, so that the flows and pressures provided to the duct network are as required.
- The variable-speed plug-fans have a flow control pressostat. This pressostat comes from the factory adjusted to the indicated flow.



- However, it is possible to readjust the flow for different conditions on site:
 - With the AVANT/AVANT+ electronic control, the potentiometer that enables calibration is found in the unit's electric panel.
 - With the AVANT Por electronic control (optional), the adjustment can be realized directly from the terminal pGD1 (see the specific brochure of this control).

Air ducts connections

The air outlet and return ducts must be calculated in accordance with the nominal flow and the unit's available pressure (refer to the technical characteristics table). The duct calculation and design must be made by qualified technical personnel.

It is advisable to take into consideration the following recommendations:

- Curves in the fan discharge outlet(s) must be avoided. It is recommendable to have a straight section of duct measuring approximately 1 metre. If it is not possible, they must be as smooth as possible, using indoor deflectors when the duct is of large dimensions.
- When making the ducts, direction sharp changes must be avoided since they can generate occasional pressure drops, which affect the available pressure and the flow. The location of discharge and aspiration grilles must be studied carefully to avoid the air recirculation and the transmission and generation of noises to the interior.
- Flexible connections must be made between the ducts and the unit that avoid the noise and vibration transmission.
- No matter the type of ducts type to use, they must not be composed of materials that propagate fire nor expel toxic gases in the event of a fire. The internal surfaces must be smooth and should not pollute the air that circulates within them. In any case, the effective legislation about this issue must be respected.

Condensate drain connection

All models are equipped with a condensate drain pan in the indoor circuit, with a bronze, gas threaded M 1 1/4" drain junction.

The units with a cooling recovery circuit (optional) have a pan with independent drain, drain joint, made of bronze, gas thread M3/4".

**CONNECT SIPHON
METTRE SIPHON
PONER SIFON**
V220014



With outdoor temperatures which are lower than 0°C the necessary precautions must be taken to prevent the water in the drain ducts from freezing.

Siphon installation norms

- Check that the condensate outlet is not clogged.
- All water drain tubes must be provided with a siphon to avoid bad smell and water spills.

Perform the assembly as per the scheme of the attached starting diagram:

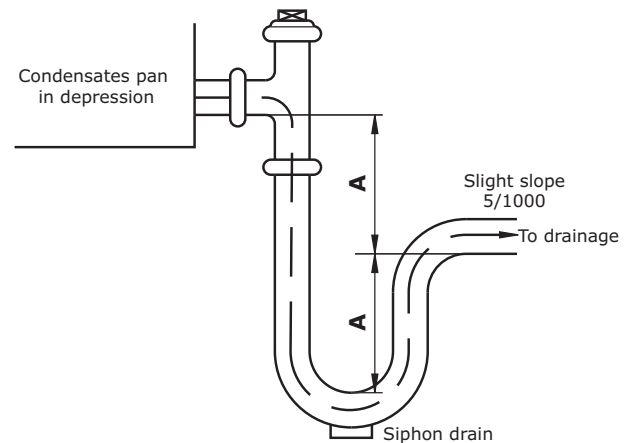
Pan in overpressure:

- It is installed to avoid the access through the drain piping of bad smells.

Pan in underpressure:

Besides the previous application, water must be sucked from the pan:

- For the correct siphon design, the "A" height must be at least twice that of the underpressure (mm.a.c) where the condensate pan is placed.
- The drain piping must be slightly sloped to ease circulation towards the drain.
- The original diameter of the piping must be respected. No reduction can be made.



Siphon principle scheme

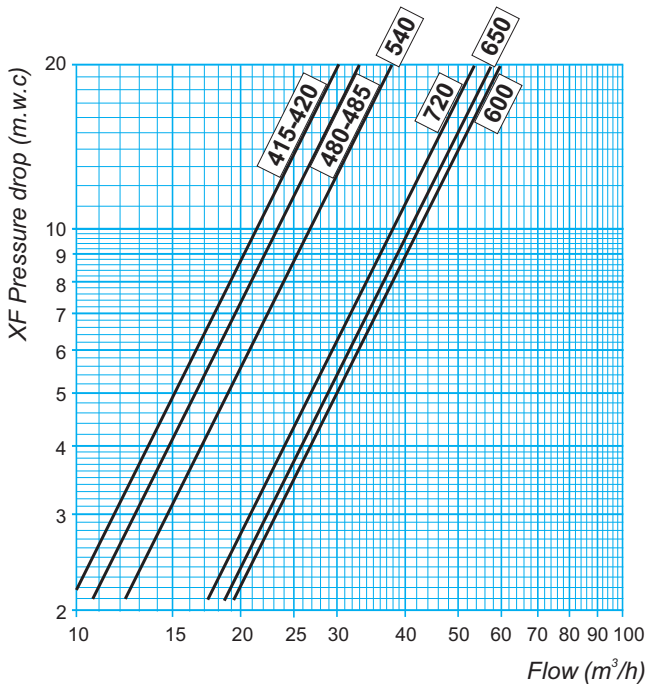


Check the connection air tightness.

Hydraulic connections

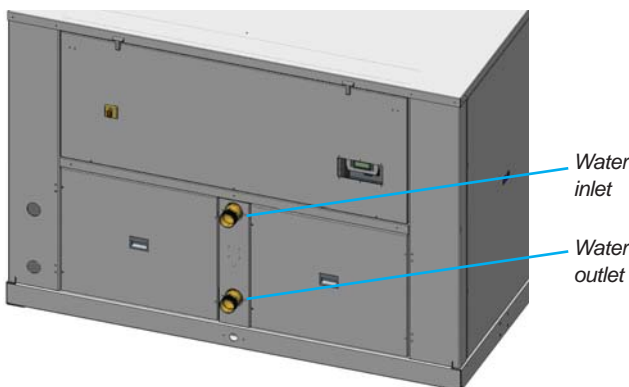
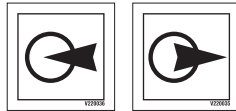
Installation hydraulic diagram

The design of the hydraulic circuit must observe the operating conditions (flows - pressure drops).



When setting up the hydraulic circuit it is advisable to follow the recommendations below:

- The direction of water circulation must be observed as indicated on the stickers on the unit.



- The diameters of the unit hydraulic connections, gas thread type, can be referred to in the technical characteristics tables.
- It is advisable to use flexible hoses for connecting the piping to the unit in order to reduce the transmission of vibrations to the building to the greatest degree. The tubes must not transmit any force or vibrations to the plate exchanger. It is mandatory to assemble hoses if the unit is installed over shock absorbers.
- The pipe layouts must be set out with the lowest possible number of bends to minimise pressure drops. The pipes must be correctly supported to prevent exerting excessive force on the unit connections.

- Before insulating the tubes and charging the system perform a preliminary check to verify that there are no drops in the installation.
- The pipes must be carefully insulated to prevent leaks and condensation. Ensure that the material used is steam barrier type. Otherwise, cover the insulation using appropriate protection.
- Provide the circuit with the essential accessories for any hydraulic circuit: circulation pump, air bleeder valves, bypass in the lower points for draining, expansion vessel, safety valve, etc.
- Install short-circuit valves near the components subject to maintenance in order to insulate the components in the maintenance phase and allow them to be replaced without needing to vent the installation.
- Both at the inlet and the outlet of the unit install, or at least plan the installation of, thermal pressure gauges which enable supervising the operation of the installation.
- **It is also necessary to install a mesh filter in the hydraulic power supply to the unit (for particulates of $\varnothing > 1$ mm) in order to prevent clogging of the plate exchanger. Non-compliance with this recommendation can cause reduced flow which can lead to freezing and breaking of the exchanger.**
- The water must be analysed and the circuit must be set out according to the results. If necessary, an expert in water treatment must come (see section on corrosion behaviour).
- Plan the anti-freeze protection for the installation when the outdoor temperature is low and the unit does not function: water with anti-freeze, draining the installation, etc.

Operation with glycol water

Glycol water must be used if there is a risk of the plate exchanger freezing.

Filling procedure:

If a pure product is used for dilution in order to protect the hydraulic circuit, the following instructions must be followed:

- Do not introduce any of the pure anti-freezing product separately and then the water in the installation.
- Always prepare the water mixture + anti-freeze + corrosion inhibitor at the correct dosage prior to introducing it into the installation.
- At minimum, a complete rinsing of the hydraulic installation must be performed.
- After the final rinsing, the installation must be completely drained.
- Introduce the water/anti-freeze/inhibitor mixture and increase the pressure with a hydraulic pump.

We recommend using a filling device with a non-return valve for compliance with the domestic anti-contamination standards. The device must never in any case be connected to the city network if the additives used in the hydraulic circuit are not approved by the Ministry of Sanitation in the country of installation.

- Completely purge the installation.
- Circulate the mixture throughout the entire installation for a minimum of 2 hours prior to starting up the unit.
- Check the final dosage obtained with a densimeter or refractometer.
- Check the pH obtained with pH paper strips or a pH metre.
- Place a label in a visible place that indicates:
 - * the presence of anti-freeze in the installation,
 - * the name of the product and the supplier,
 - * the dosage and the pH as of the time the unit is started up.

If more amount is needed, it must be exactly the same mixture as the product initially used.

The following table and curves feature the minimum glycol percentages required for the installation in accordance with the freezing point.

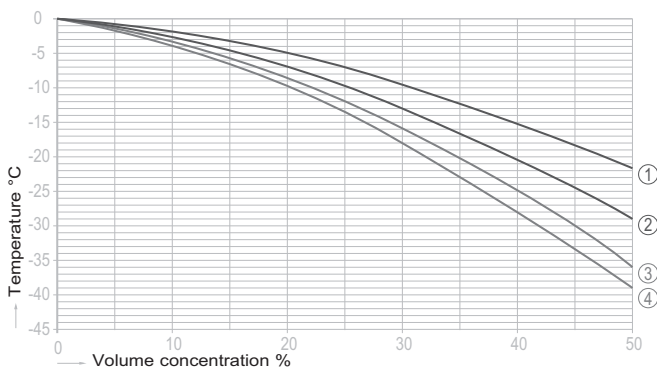
Warning: the glycol concentration must keep the fluid at least 6°C below the outlet water temperature foreseen in the evaporator in order to allow a correct calibration of the evaporator's minimum pressure regulation. If the concentration is below the necessary amount, there is a risk of freezing. On the other hand, any excess of concentration entails a decrease in performance.

Required glycol concentration

Concentration	%	0	10	20	30	40	50
Mono-ethylene glycol (MEG) °C		0	-3	-7	-13	-20	-29
Mono-propylene glycol (MPEG) °C		0	-2	-5	-10	-15	-21

Note: The values are offered as a guide according to the standard characteristics of the MEG. These may vary based on the MEG manufacturer, which is why it is necessary to consult the manufacturer data in order to guarantee protection up to the desired temperature.

Minimum freezing and usage temperature graphs



Minimum usage temperature:

- ① - Mono-propylene glycol
- ② - Mono-ethylene glycol

Freezing temperature:

- ③ - Mono-propylene glycol
- ④ - Mono-ethylene glycol

Corrosion behaviour

The units' hydraulic circuits are made of copper pipes. The exchanger plates are made of AISI-316 stainless steel, and the material used for soldering the plates is copper.

The following table indicates corrosion behaviour for copper and the AISI-316 stainless steel with regard to water with different compositions. Values outside these ranges can cause corrosion problems in the hydraulic circuit and in particular in the plate exchangers.

Water content	Concentration (mg/l)	AISI 316	Copper
Organic substances		+	0
Electrical conductivity	< 500 μ S/cm	+	+
	> 500 μ S/cm	+	-
NH ₃	< 2	+	+
	2 - 20	+	0
	> 20	+	-
Chlorides *	< 300	+	+
	> 300	0	+
Sulphites, chloride-free	< 5	0	+
	> 5	0/-	0
Iron in solution	< 10	+	+
	> 10	+	0
Free carbonic acid	< 20	+	0
	20 - 50	+	-
Manganese in solution	< 1	+	+
	> 1	+	0
pH value	< 6	0	+
	6 - 9	0/+	+
	> 9	+	0
Oxygen	< 2	+	+
	> 2	+	+
Sulphates	< 70	+	+
	70 - 300	+	0
	> 300	-	-

* Max. 60°C

+ Good resistance under normal conditions.

0 There may be corrosion problems, especially if other factors intervene.

- Not advisable.

It is recommended that the water filling the hydraulic circuits be filtered and treated, if necessary.



Note: For open-circuit installations, if it is not possible to maintain the water conditions within the values indicated in the previous table, it will be necessary to install an exchanger that separates the unit's circuit from the water circuit to be treated by using materials compatible with these characteristics, whether stainless steel or titanium.

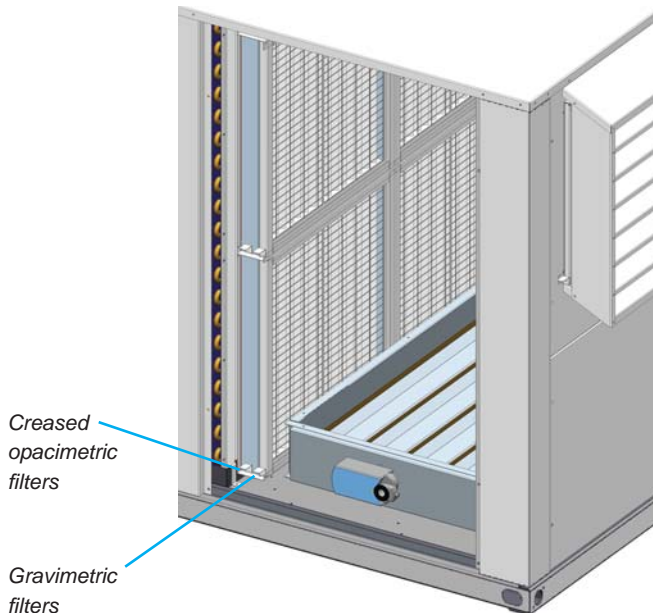
10. OPTIONS



The installation of some of these options brings in pressure drops at air level so it needs to be contemplated in the selection of fans of higher pressure (optional) or in the substitution of the standard pulley set with a new set that contributes a higher turn speed to the pad. Both the fan performance curves, as well as the pressure drop graphs in the options, can be consulted in the technical brochure for the Space Aqua XF series.

Filters

All model types can substitute the filtering mesh that the units include regularly with G4 rating, mounted on the same frames. Creased opacimetric filters classified F6 to F9, as well as double stage F+F creased opacimetric filters, can also be added.

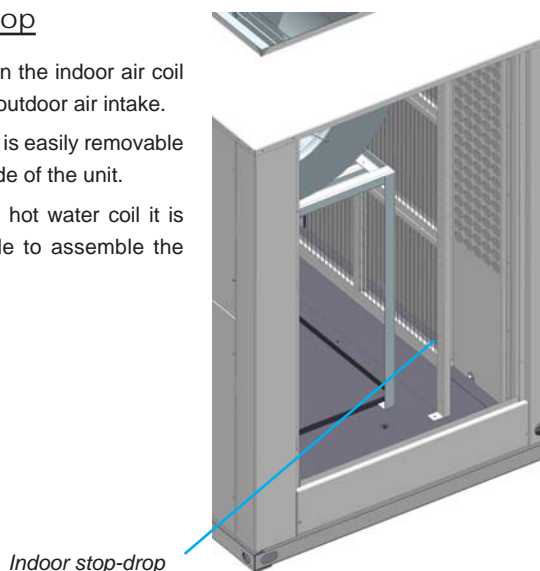


Stop-drop

Stop-drop in the indoor air coil and at the outdoor air intake.

This option is easily removable from the side of the unit.

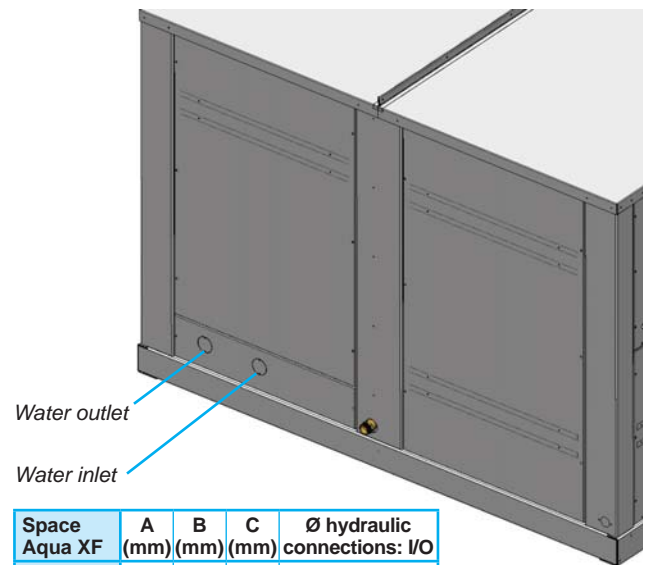
Note: With hot water coil it is not possible to assemble the stop-drop.



Hot water coil

- Hot water coil with a three-way valve managed by the electronic control of the unit.
- Assembly inside the unit. The inlet/outlet connections of the hot water coil are located inside the unit. The connection can be established via the unit base using flexible piping or via the side panel. In the diagram below the position of the sheet metal precuts is shown on the side panel.

Note: With stop-drop in the indoor air coil it is not possible to assemble the hot water coil.



Space Aqua XF	A (mm)	B (mm)	C (mm)	Ø hydraulic connections: I/O
415 to 720	302	250	222	2"

- Coil filling:
 - The coil filling must be made with the bleeder valve open until water runs through it, which is when it is time to close it.
 - Cut off the water supply and let the bubbles generated go up to the highest coil point, which is the same as the bleeder valve, and eliminate by opening the purger.
 - Pour more water into the circuit and repeat the previous steps.
 - Activate the water pump (to be foreseen by the installer) and repeat the previous steps until no air noises are heard in the piping, which is when the filling of the installation will have been finished successfully.
- In case of long unit stops, and forcibly if they happen in the winter season, the coil must be emptied.
- To prevent the water from freezing, with this option the unit always has an anti-freezing thermostat. Add glycol to the water if necessary.
- The direction of the water flow must be correct and so the following indications must be observed:



Electrical heater

- The auxiliary electrical heaters are ready for operation in two power stages. Assembly and connection inside the unit.
- The electrical heaters acquired with the unit will be incorporated to it modifying the electric panel in the factory, so that it is compatible with the electronic control.
- The electrical heaters requested for units already shipped will be sent in a kit, and the installer will need to assemble the necessary elements for the operation of the unit to assemble and for the compliance with the legal regulations that are applied to the modified unit in terms of safety.

Note: Consult the available capacities in the technical brochure.

Kit assembly:

When the frame with the electrical heaters is provided in a kit, follow the steps below for connecting it:

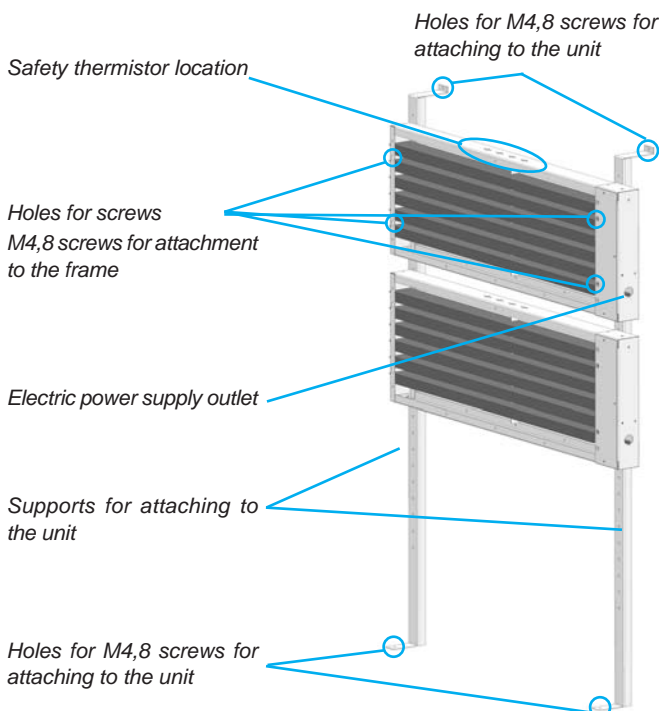
Step 1: the resistors are sent divided into 2 or 4 frames, depending on the required power, as shown in the following table:

Output (kW)	36	45	54	72
Stages (kW)	18+18	18+27	27+27	36+36
XF 415 to 485	2 frames			--
XF 540 to 720	--	2 frames		4 frames

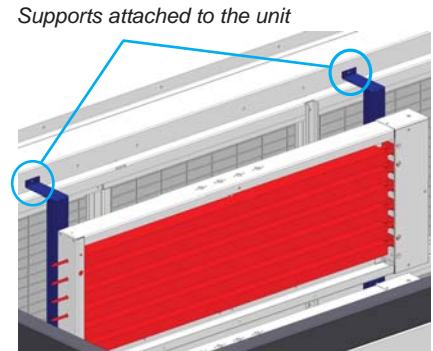
To attach these frames to the unit, four supports are provided. In the case of 2 frames, screw each one of them to 2 supports with the 4 M4,8 screws included in the kit.

The height of the frame on the support will depend on the position of the discharge, since it should never be behind the fan volute.

For example, in the following diagram, the frame location will be valid for lower and side discharge.



Step 2: attach the supports with the frames linked inside the unit. To that extent, drills have been made in the unit to which the supports must be screwed.

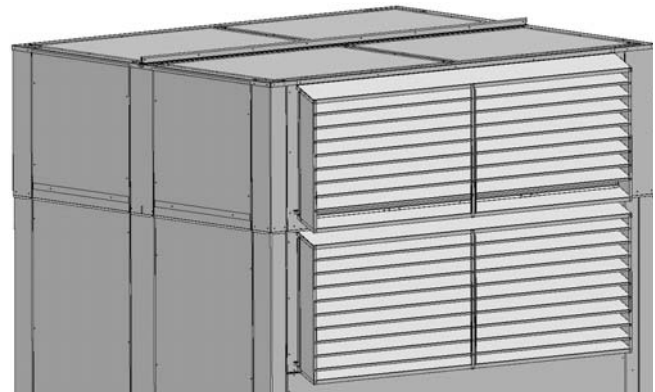


Step 3: Take the hoses with the electric power supplies to the main electric panel of the unit. On the wiring diagram supplied with the unit an illustration is included with the implantation in the platen of all the components.

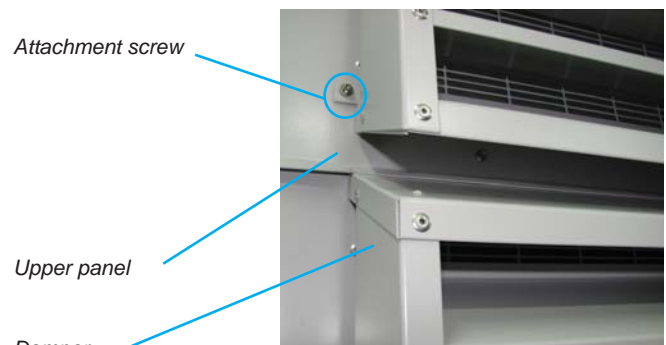
Note: The connection of the necessary elements for the adequacy to the operation of the unit must be performed by the installer. The kit is supplied with the required electric material: thermistors, contactors, hoses, etc.

Damper cover

In all assemblies with a damper cover (new air or air extraction), the damper is supplied independently from the unit so that it may be assembled by the installer on-site.



Fasten the damper to the panel with self-turning screws.



Note: The upper grip of the damper must be inserted from below the upper panel in order to prevent water from entering.

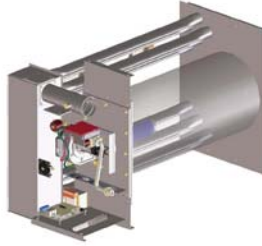


Compact water-air rooftop units

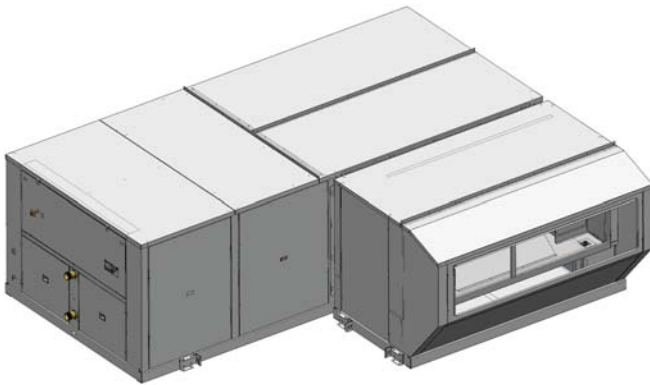
Space Aqua XF

Gas Burner

Natural gas or propane gas burner with proportional actuator 0-10V designed in accordance with the standards in force in compliance with the Gas Directive 90396 EEC (see CE homologation certificate of the unit with burner in specific gas burner brochure).



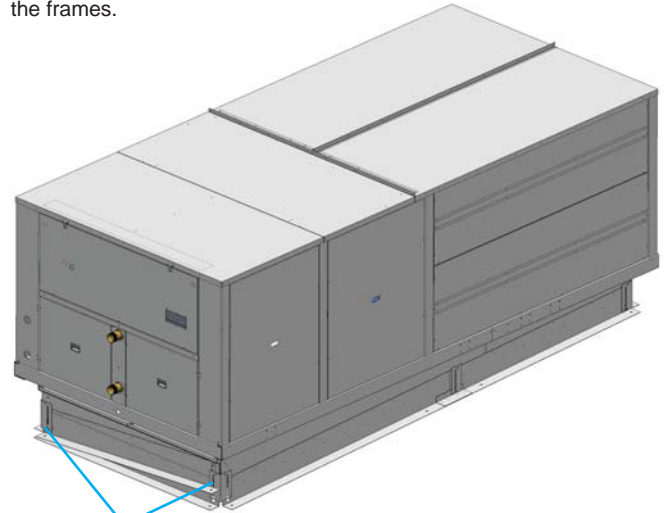
Note: For detailed information please refer to the specific gas burner brochure.



Pre-assembly frames (optional)

The units can be attached to standardised preassembled frames with adjustable height, built in galvanised steel panelling with thermal insulation.

Note: For more information please consult the specific brochure for the frames.



Control system

11. SAFETY ELEMENTS

Low pressure pressostat



When connected to the compressor suction, it will stop its operation when the pressure at that point goes down below the tare value (caused by obstructions in the circuit, excessive dirt in the filters or fan stop). It disconnects at 2 bar and it is automatically reactivated.

High pressure pressostat

Connected to the compressor discharge, it will stop its operation when the pressure at that point reaches the setpoint. It disconnects at 42 bar and it is automatically reactivated.



Liquid receiver safety valve

The heat pump models include a safety valve in the liquid receiver. Valve tare value at 45 bar.



Caution: Avoid the valve triggering direction.

Safeties at the compressor

The scroll type compressor that these units as standard have the following safeties:

- Non-return valve built into the compressor.
- Temperature probe for the discharge from the compressor to protect the unit with discharge temperatures greater than 135°C.

Refrigerant anti-freeze safety device

The pressure transducer located between the plate exchanger and the cycle inversion valve reports on the temperature of the refrigerant. When working in HEATING mode, if this temperature does not reach the setpoint value, the electronic control generates an alarm and the compressors stop. This safety device is reset manually.

Water circulation control

A water flow switch detains the operation of the unit when, while working in HEATING mode, it does not detect water circulation due to the position of the flap.



Flap

Main door switch.

By using a mechanical device, it impedes access to the electric panel when the unit is with voltage.

DO NOT OPEN WITH VOLTAGE
NE PAS OUVRIR SOUS TENSION
NO ABRIR CON TENSION

V220007



Compact water-air rooftop units

Automatic switch in the control circuit.

Magnetothermal switch that protects the operation circuit against continuous surges as well as against high currents of short duration (short circuits).

Magnetothermals for line protection

They are located at the beginning of the power lines of the compressor and motorised fans to protect them.

Anti-fire safety

The electronic control can activate an anti-fire safety device (in units with a return air probe) that detains the unit when the return air surpasses a temperature of 60°C. It cannot return to operation until the temperature has dropped to below 40°C.

Condensation/evaporation pressure control

Pressure control for condensation (in refrigeration) and evaporation (in heating) is done via a three-way valve that controls the inlet of the water to the plate exchanger.

This valve, which has proportional control and is managed by the unit's electronic control, will be located on the water outlet piping of the plate exchanger of each circuit.

Protection of the electric panel (optional)

Anti-freeze protection for low outdoor temperatures with electrical heater. This safety device is recommended in particular with a gas burner and is mandatory for an outdoor temperature lower than -8°C WB. A reinforced heater is mandatory for a temperature lower than -16°C WB.

Clogged filter detector (optional)

Differential pressostat for indication of maintenance to filters. Automatic resetting. This safety device is recommended in particular with a gas burner.

Air flow control (optional)

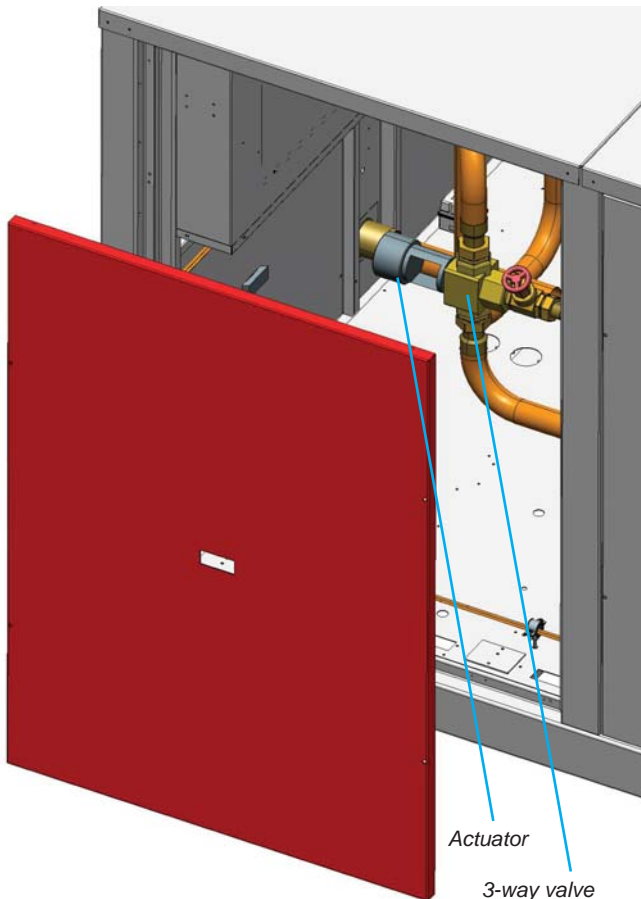
Differential pressostat that measures the flow variation in the air outlet. This allows the detection of fan belt breakages, since the fan relay only detects operating faults that have arisen in the motor.

This safety device is compulsory in units with electrical heaters or gas burners.

In units with a outlet plug-fan (optional), this pressostat is not assembled because that fan has its own safety device.

Smoke detector (optional)

This smoke detection station uses a led to indicate the installation state and whether the probe that has the smoke presence in the installation stops the operation of the unit.



Smoke detecting station

Smoke detecting probe

Air quality probe (optional)

This probe is for installation in the environment or in duct to enable measuring CO₂ and/or volatile compounds.

This probe is to be connected by the client. The clamps on the terminal board on the electric panel used for the connection are indicated on the wiring diagram provided with the unit.

This probe is supplied inside the electric panel.



Probe for conduct



Probe for ambient

12. COMMISSIONING

Checks prior to commissioning

- It is advisable to make a complete sketch of the installation including the location of the unit and all the components used. This will be very helpful for maintenance and repairs to the installation.
- The following must be verified:
 - That the electrical power supply remains constant and that it corresponds to that featured on the unit data plate.
 - That the electric installation has been carried out according to the electric wiring diagram provided with the unit (consult the chapter on "Checking before commissioning").
 - The correct connection of the sensors supplied with the unit.
 - That they are no cables close to heat sources.
- Once the above verifications have been carried out, supply the control circuit with voltage by the automatic control switch. It is necessary to leave with voltage the compressor crankcase heater for 24 hours before starting the compressor.

- When commissioning the compressors, check the subcooling and overheating and thus verify if the refrigerant load is appropriate to the operating conditions.

R 410A

- If the refrigerant load is lower than that required, the suction pressure will be considerably lower than normal. This can cause an interruption in operation due to activation of the refrigerant load safety device. To adjust the refrigerant load, a schrader valve is built into the unit on the liquid line.

Note: If the refrigerant load is insufficient, the liquid sight glass will not be clean and gas bubbles will appear as foam.

WICHTIG: WIEDERBEHEIZUNG DER OLWANNE

BEI DER ERSTEN INBETRIEBSETZUNG ODER NACH EINER LANGEN STROMUNTER-BRECHUNG BRINGEN SIE DIE MASCHINE UNTER SPANNUNG 24 STUNDERLANG BEVOR SIE DEN(DIE) KOMPRESSOR(EN) EINSCHALTEN KOENNEN.

IMPORTANT: CRANKCASE HEATING

FOR THE FIRSTSTART OR AFTER A LONG TIME OUT OF VOLTAGE PUT THE MACHINE ON LIVE 24 HOURS BEFORE TO ALLOW THE COMPRESSOR(S) STARTING.

IMPORTANT: SURCHAUFFE CARTER D'HUILE

AU PREMIER DÉMARRAGE OU APRÈS UNE ABSCENCE DE COURANT PROLONGÉE, METTRE LA MACHINE SOUS TENSION 24 HEURES AVANT D'AUTORISER LE DÉMARRAGE DU(DES) COMPRESSEUR(S).

IMPORTANTE: RISCALDARE IL CARTER DELL'OLIO

AL PRIMO AVVIAMENTO U DOPO UNA INTERRUZIONE PROLUNGATA DELLA ALIMENTAZIONE ELETTRICA, LASCIARE LA MACCHINA SOTTO TENSIONE PER 24 ORE PRIMA DI AUTORIZZARE L'AVVIAMENTO DEL(DEI) COMPRESSORE(I).

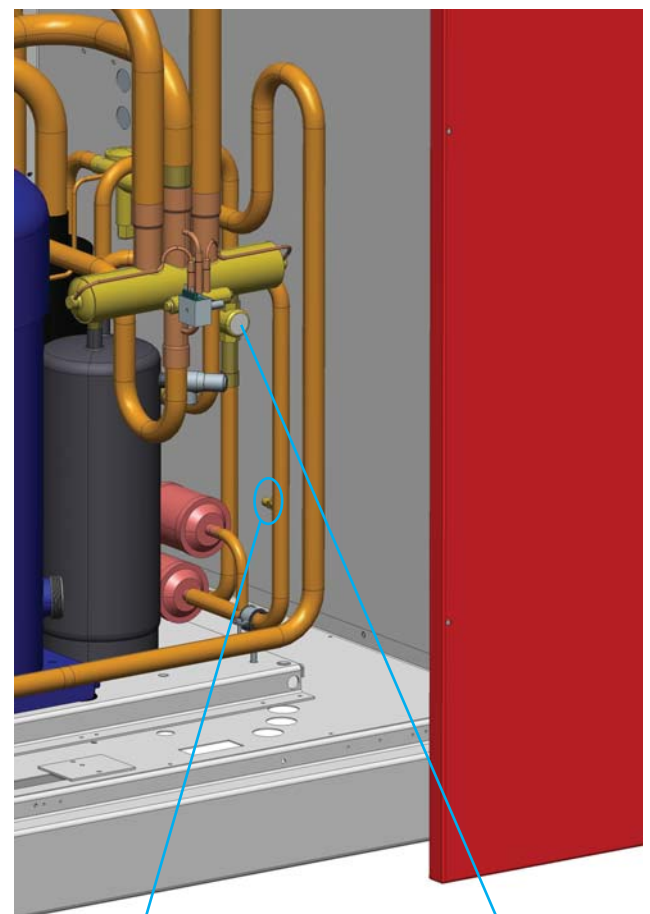
IMPORTANTE: RECALENTAMIENTO DE ACEITE DEL CÁRTER

ANTES DEL PRIMER ARRANQUE O DESPUÉS DE UNA AUSENCIA DE CORRIENTE POR UN LARGO PERIODO DE TIEMPO, CONVIENE QUE LA UNIDAD ESTÉ CONECTADA UN MÍNIMO DE 24 HORAS.

V220084

- The filling of the hydraulic circuit is then carried out:
 - Open the water circuit valves and ensure that the water circulates around the exchanger with the pump in service.
 - Bleed the air in the hydraulic circuit.
 - Check the operation of the water flow switch and the hot/cold water control in the heat pump units.

Note: if no water circulation is detected, it must be checked that there are no elements obstructing the flow switch flap.

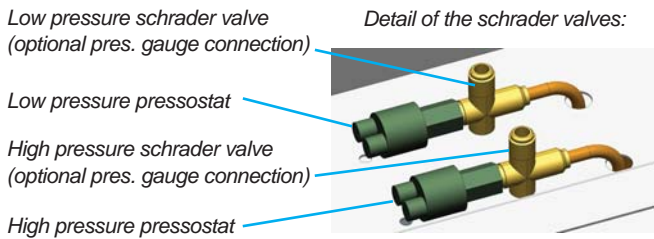
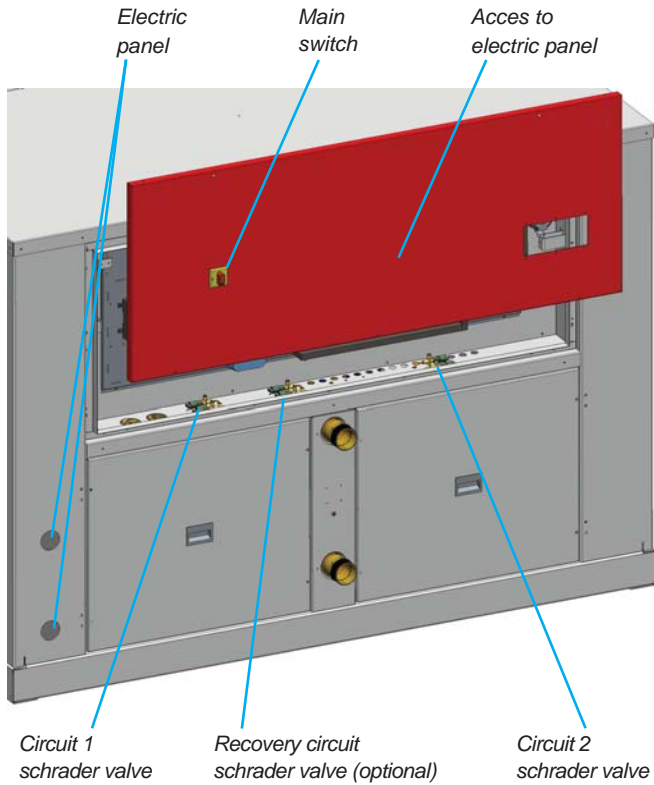


Load schrader valve

Liquid sight glass

- Verify the absence of any leaks of the refrigerant. In the event of a leak:
 - Completely empty the unit using a specific recovery unit for R-410A and repair the leak.
 - Next, reload the gas into the unit according to load data provided in the technical characteristics table and in the unit's data plate.

- Add the refrigerant slowly via the low pressure schrader valve, whilst the compressor is in operation, monitoring the pressures should there be any anomaly.



- These units are equipped with scroll type compressors and have a phase control relay. Verify that they turn in the correct direction and, if not, reverse the power wires.

SCROLL COMPRESSOR.
CHECK SENSE OF ROTATION
COMPRESSEUR SCROLL.
VÉRIFIER LE SENS DE ROTATION
COMPRESOR SCROLL.
COMPROBAR SENTIDO DE GIRO

V220040



- Check the unit operation and verify the safety devices (described in Chapter 11).
- When putting the hydraulic circuit into commission, the water flow must be checked, verifying that the inlet and outlet water temperatures measured are within operating limits.

Operational checks

Check the unit operation by verifying the electronic control and the safety devices.

It is also recommendable to create a report, taking note of the date, which includes the following information: the nominal voltage, current absorbed by the compressors, fans and other electrical components, significant temperatures in the cooling circuit (see table below) and other aspects considered interesting such as alarms detected by the electronic control of the unit.

The recording of these parameters whilst the unit is running allows controlling the installation performance and it is the best possible way to avoid breakdowns since the analysis of these data makes early detection of anomalies possible or the provision of the necessary means available to ensure that they do not take place.

Cooling MODE			Heating MODE		
Compressor	Suction pressure	bar	Compressor	Suction pressure	bar
	Suction temp. (1)	°C		Suction temp. (1)	°C
	Condens. pressure	bar		Condens. pressure	bar
	Condens. temp. (2)	°C		Condens. temp. (2)	°C
Water condenser	Gas inlet temperature	°C	Water evaporator	Liquid inlet temp.	°C
	Liquid outlet temp. (3)	°C		Gas outlet temp. (4)	°C
	Water inlet temp.	°C		Water inlet temp.	°C
	Outdoor temperature	°C		Outdoor temperature	°C
	Water outlet temp.	°C		Water outlet temp.	°C
Air evaporator	Air inlet temperature	°C	Air condenser	Air inlet temperature	°C
	Air outlet temperature	°C		Air outlet temperature	°C
	Liquid inlet temp.	°C		Gas inlet temperature	°C
	Evap. outlet temp. (4)	°C		Liquid outlet temp. (3)	°C
	Subcooling (2) - (3)	°C		Subcooling (2) - (3)	°C
Overheating (4) - (1)	°C	Overheating (4) - (1)	°C		

Possible problems at commissioning

All indications given in this brochure must be respected and complied with to guarantee a correct operation of the units.

Next, several possible operation problems are stated which could happen if the conditions of the commissioning are not appropriate.

- Air flow lack: very high differences between inlet and outlet, originated by a high pressure drop in the ducts, or by other causes that impede the correct air circulation.
- Air recirculation in the unit, originated by some obstacle in the air aspiration or outlet.
- Noise problems because of excessive air flow in the grille.
- Water overflowing to the pan problems, originated by an excessive flow, an incorrect siphon installation or because a defective unit level.
- Refrigerant circuit humidity problem, because of an incorrect vacuum realization.

13. MAINTENANCE

The minimal maintenance operations and their periodicity will be made according to the national regulations.

Any intervention on the electric cooling components must be made by a qualified and authorized technician.

Technicians who intervene with the unit must use the necessary safety equipment (gloves, goggles, insulating clothing, safety shoes, etc.). Furthermore, if working around sources of significant noise, we recommend the use of noise-dampening headgear.



Caution: Before intervening in the unit, cut off main power.

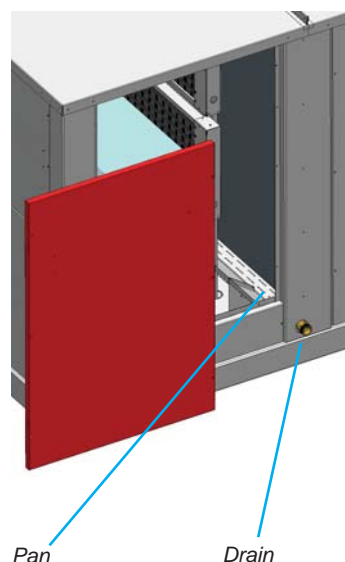
Recommendations:

- Do not lean on the unit. A platform must be used to work on a level.
- Do not lean on the copper refrigerant tubes.
- Keep the unit clean.
- Keep the space surrounding the unit clean and cleared in order to avoid accidents and ensure the proper ventilation of the coil.
- Perform a visual (remains of water or oil below or around the unit) and auditory inspection of the entire installation.
- In general, a corrosion control must be performed on the metallic parts of the unit (frame, bodywork, exchangers, electric panel, etc.).
- Check that the insulation foam is not unstuck or torn.
- All the electric connection states must be checked as well, as well as the air tightness of the different circuits.

Next, some recommendations are stated for performing the maintenance and cleaning of the unit's components:

Condensate drain pan

- Check that the condensate pan is clean. There should be no stagnant water.
- Check that the drain is not clogged.
- Cleaning of the pan can be done with water and non-abrasive detergent.

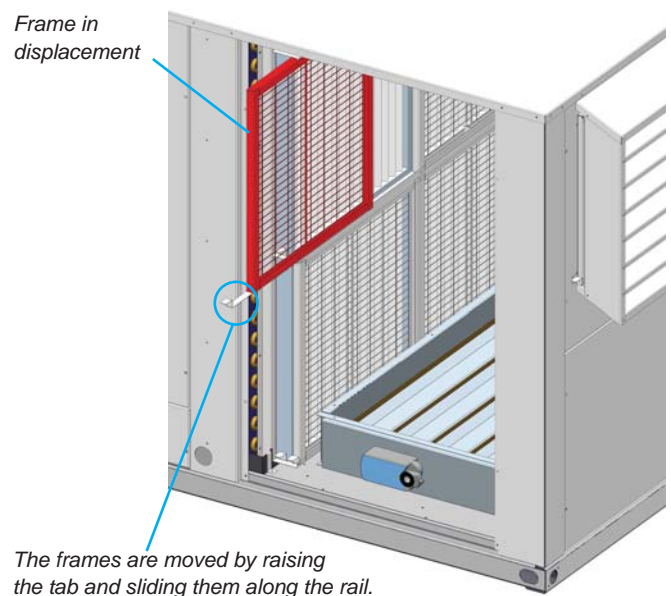
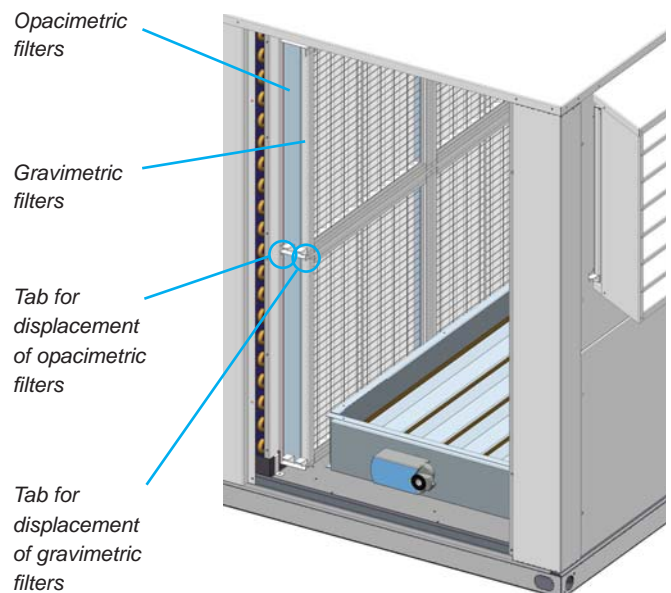


Air filters

- Clean usually. Depending on the installation conditions, the filter aspect must be examined to define the cleaning periodicity.
- Gravimetric filters. Cleaning the filtering mesh can be done with a household vacuum cleaner, or else by submerging it in water.
- Creased opacimetric filters. It is necessary to replace them. Foresee replacement.

Filter removal:

The frames with the gravimetric filters as well as opacimetric frames (if the unit has includes them) are assembled over a sheet steel profile. By dragging a tab, they slide along the rail.



Centrifugal fan

- Verify that the turbine and the motor remain clean.
- Foresee having a spare belt set for the fans.
- The motors and the fans have bearings that have been lubricated and sealed and, thus, do not need further lubrication (except in the case of fans with a reinforced shaft).

Mixing boxes and free-cooling

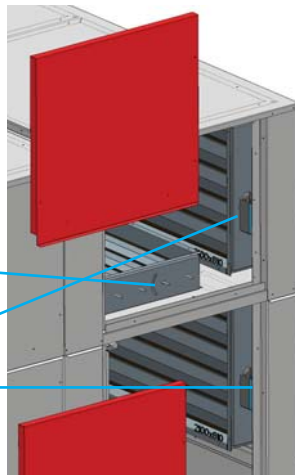
In units with mixing box assemblies with motorised dampers it is advisable to check the condition of the servomotors.

Assemblies 2 dampers-> 1 servo

Assemblies 3 dampers -> 2 servos

Interlocked damper

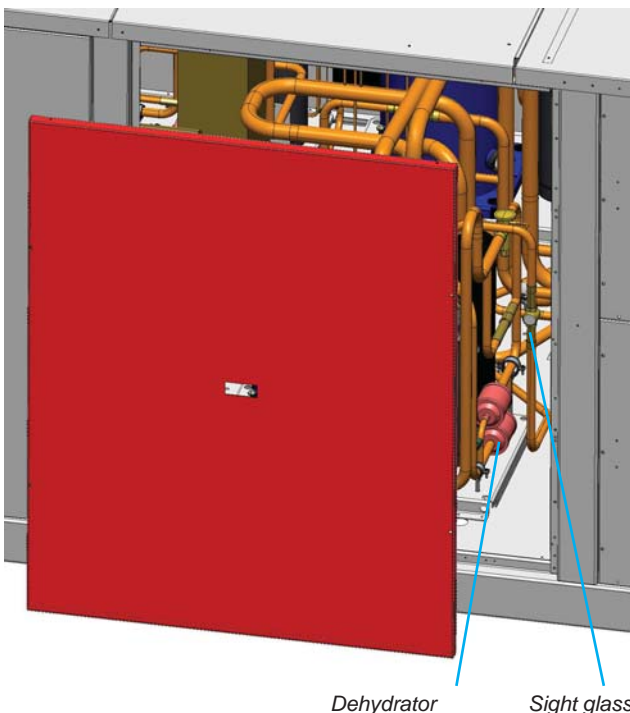
Servomotors



Note: The available assemblies can be consulted in chapter 4.

Dehydrant filter

- The filter function is to preserve the cooling circuit clean and without humidity, neutralizing the acids that can be found in the cooling circuit.
- Verify dirt measuring the difference in temperature at the piping level, at the inlet and at the outlet of the dehydrant.
- If necessary, replace.



Dehydrator

Sight glass

Liquid sight glass

This sight glass, located on the liquid line of each circuit, enables controlling the refrigerant load and the presence of moisture. The presence of bubbles in the indicator means that the refrigerant fluid load is insufficient (see chapter 3 "Technical characteristics") or that there are non-condensable products in the cooling circuit. The presence of moisture is characterised by the change in colour of the control paper located on the sight glass.

Warning:

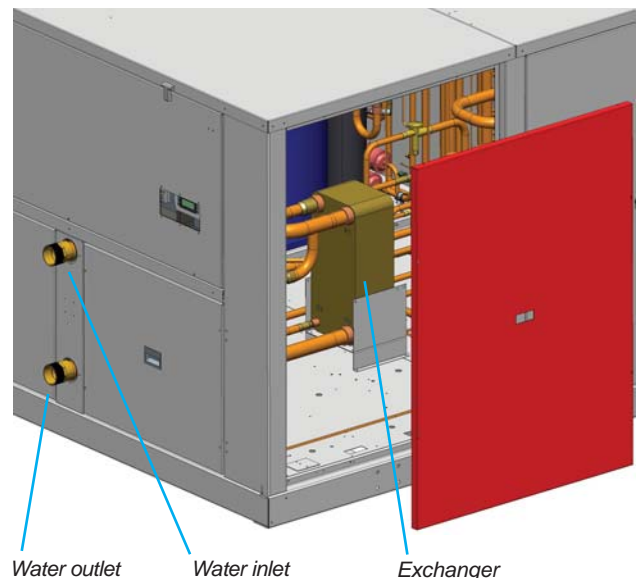
If the unit stops, certain indicators may appear in yellow; the change in colour is due to the sensitivity, which depends on the temperature of the fluid.

These will change to green after a few hours of the unit operating.

If the indicators remain yellow, that will indicate the presence of excessive humidity in the circuit. This will require the presence of a specialist.

Plate exchanger

- The exchangers are fitted with thermal insulation. Check that the foam is not unstuck or broken.
- The water quality and the pressure drop must be verified at the exchanger level. After verifying the mesh filter condition, if necessary, the exchanger must be cleaned. To this end, a weak solution of phosphoric acid 5% must be circulated using the high pressure pump. During optimum cleaning, the cleaning solution flow must, as a minimum, be 1,5 times the working flow, preferably in the inverse circulation mode. This must be followed by thorough rinsing with water to remove any acidic residues. It is advisable to circulate a solution 1%-2% of sodium hydroxide prior to the last rinsing in order to ensure that the acid has been neutralised.
- Any repair or modification to the plate exchanger is prohibited. It can only be replaced by an original part.



Water outlet

Water inlet

Exchanger

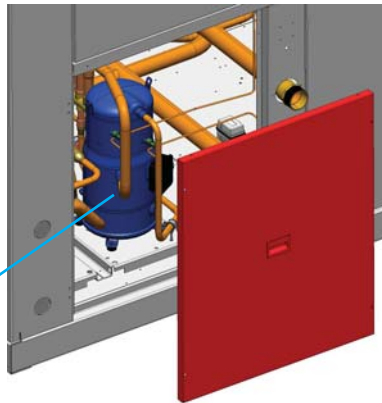
Compressor

In the case of compressor replacement:

- The compressor is fixed onto the platform with 4 screws Ø 8 mm.
Warning: when tightening the compressor screws, the maximum torque to be applied is 13 Nm ± 1 for these models.
- If a torque wrench is not available, tighten them until noticing resistance, then tighten the screws by turning them 3/4 of a revolution.

Active recovery

These units have the option of having a cooling recovery circuit (MRC0 and MRC1 assemblies). This makes a complete circuit with independent control.



Recovery circuit compressor

Oil

Oils used for cooling machines do not post any threat to one's health if used while following the usage guidelines:

- Avoid any unnecessary manipulation of the elements covered in oil. Use protection creams.
- Oils are flammable and must be stored and handled with precaution. "Disposable" rags or towels used for cleaning must be kept away from open flames and must be discarded by using the appropriate procedure.
- Jugs must be kept closed. Avoid using oil from an already-open jug kept in poor conditions.

Both the oil type as well as the volume needed for each model are stated in the characteristics table in chapter 3.

- Check the oil level and aspect. In case of a colour change, check the oil quality using a contamination test.
- In the case of the presence of acid, water or metallic particles, replace the affected circuit oil, as well as the dehydrant filter.
- In the event of an oil load change, only new oil will be used, which will be identical to the original oil and taken from a jug tightly closed until the moment of the load.

Refrigerant

Qualified personnel must perform a periodic control to air tightness depending on the refrigerant load, in accordance with the regulation (CE) N° 842/2006.

It is important not to ever forget that the cooling systems contain liquids and vapours under pressure. The service pressure of R-410A is approximately 1.5 times higher than that of R-407c.

- All necessary precautions must be taken during the partial opening

of the cooling circuit. This opening entails the discharge of a certain amount of refrigerant to the atmosphere. It is essential to limit to its minimum this amount of lost refrigerant by pumping and isolating the charge in some other part of the circuit.

- The refrigerant fluid at low temperature can cause inflammatory injuries similar to burns when contacting the skin or eyes. Always use safety goggles, gloves, etc. when opening ducts that may contain liquids.
- The refrigerant in excess must be stored in appropriate containers and the amount of refrigerant stored at the technical rooms must be limited.
- Refrigerant barrels and deposits must be handled with precaution and visible warning signs must be placed to attract attention over the risks of intoxication, fire and explosion linked to the refrigerant.
- At the end of its useful life, the refrigerant must be retrieved and recycled as per the current regulations.

Gas Burner



Caution: Before starting any maintenance operations ensure that the supply of gas and electricity have been turned off.



Only qualified staff are allowed to undertake maintenance tasks or resolve a breakdown.



Pay attention to the temperatures of some components after operation. They could be very high (exchanger, chimney, etc).



Hazard: Never use a naked flame whilst checking the burner.

The maintenance and checking of the combustion must be performed in compliance with the legislation in force.

Note: For more detailed information please refer to the specific gas burner brochure.



14. CONTROL AND ANALYSIS OF BREAKDOWNS

Symptom	Cause	Solution
Evaporation pressure very high in relation with the air or water inlet	<ul style="list-style-type: none"> a) Load excess b) Elevated air or water temperature c) Compressor suction not air tight d) Cycle reversing valve in middle position 	<ul style="list-style-type: none"> a) Collect refrigerant b) Verify overheating c) Verify compressor state and replace d) Check that the valve is not clogged. Replace if necessary
Very low condensation pressure	<ul style="list-style-type: none"> a) Gas lack b) Compressor suction not air tight c) Cycle inversion valve in middle position d) Liquid circuit plugging 	<ul style="list-style-type: none"> a) Search for leaks, complete load b) Verify compressor state and replace c) Check that the valve is not clogged. Replace if necessary d) Verify the dehydrating filter and expansion valve
Condensation pressure very high in relation to the air or water outlet, high pressure pressostat cut-off	<ul style="list-style-type: none"> a) Air or water flow insufficient b) Air or water inlet temperature very high c) Dirty condenser (does not exchange) d) Much refrigerant load (flooded condenser) e) The pump or condenser fan is broken down f) Air in the cooling circuit 	<ul style="list-style-type: none"> a) Verify the air or water circuits (flow, filter cleanliness etc.) b) Verify the control thermostat readjustment c) Clean it d) Collect refrigerant e) Repair f) Make vacuum and load
Evaporation pressure too low (low pressostat cut-off)	<ul style="list-style-type: none"> a) Low flow in evaporator. Air or water recirculation b) Liquid line as different temperatures at filter inlet and outlet c) Gas lack d) Very low condensation pressure e) Evaporator fan broken down 	<ul style="list-style-type: none"> a) Verify the air circuits (flow, filter cleanliness...) b) Replace filter c) Search for leaks, complete load d) Temperature of air or water in condenser very low (air or water flow very high), adjust flow e) Repair
Compressor does not start, does not make noise (humming)	<ul style="list-style-type: none"> a) No power b) The contacts of a control element are open c) Timing of anti cycle short does not allow the starting d) Open contact e) Contactor coil burnt f) Indoor Klixon open 	<ul style="list-style-type: none"> a) Check differential, fuses b) Verify the safety chain of the electronic control c) Verify electronic control d) Replace e) Replace f) Wait for reactivation, verify intensity absorbed
Compressor does not start, motor sounds intermittently	<ul style="list-style-type: none"> a) Electrical power supply very low b) Power cable disconnected 	<ul style="list-style-type: none"> a) Control line voltage and locate voltage drop b) Verify connections
Repeated compressor starts and stops	<ul style="list-style-type: none"> a) Because of high pressure b) Control differential too short (short cycle) c) Insufficient gas, cut-off because of low pressure d) Dirty or frosted evaporator e) The evaporator fan or pump does not work, cuts off the low pressostat f) Expansion valve damaged or clogged by impurities (cuts off low pressostat) g) Dehydrating filter clogged (cuts off low safety) 	<ul style="list-style-type: none"> a) Verify load b) Increase differential c) Search for leak, reload unit d) Clean, verify evaporator air circuit e) Replace or repair f) Replace, as well as filter g) Replace
The compressor makes a noise	<ul style="list-style-type: none"> a) Loose attachment b) Oil lack c) Compressor noise 	<ul style="list-style-type: none"> a) Fix b) Add oil to recommended level c) Replace
Noisy operation	<ul style="list-style-type: none"> a) Unit installed without antivibration protection 	<ul style="list-style-type: none"> a) Place base over shock absorbers
Cycle reversing is not carried out	<ul style="list-style-type: none"> a) Electrical fault b) Inversion valve coil defective c) Cycle inversion valve in middle position d) Control fault 	<ul style="list-style-type: none"> a) Locate and repair b) Replace c) Tap with running compressor Replace if necessary d) Locate and repair
Alarm or reading error in the humidity probe (with AVANT PRO enthalpic electronic control)	<ul style="list-style-type: none"> a) Dirt in the humidity sensor 	<ul style="list-style-type: none"> a) Disassembly the probe encapsule b) Proceed to clean the sensor with some soft cotton element and non-abrasive fluid, without pressing it c) Reassemble the casing, checking that the cable is in contact externally with the metallic mesh



DECLARACIÓN DE CONFORMIDAD CE

DECLARATION OF CONFORMITY EC - DÉCLARATION DE CONFORMITÉ CE

El Fabricante / The Manufacturer / Le Fabricant:

CIATESA - Pol. Ind. "Llanos de Jarata" c/ Narciso Monturiol S/N - 14.550 Montilla (Córdoba - ESPAÑA)

Declara que el producto descrito a continuación / Declare that the designated product below / Déclare que le produit désigné ci-dessous:

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Modelo / Designation / Désignation

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PF

HA, N, NE, BCP JUNIOR, BCP AQUAIR, BCP AIRMASTER

TB, TBH, LP, LPC, WE, WED, WEB

XH, XV, XP, XF, MI

ADX, RPLD

RDX, RPL, IPL

es conforme a las disposiciones / is in conformity with the following directives / est conforme aux dispositions:

Directiva de MAQUINAS
MACHINERY Directive
Directive MACHINES **2006/42/CE**

Directiva de COMPATIBILIDAD ELECTROMAGNÉTICA
ELECTROMAGNETIC COMPATIBILITY Directive
Directive COMPATIBILITE ELECTROMAGNETIQUE **2004/108/CE**

Directiva de BAJA TENSIÓN
LOW VOLTAGE Directive
Directive BASSE TENSION **2006/95/CE**

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Para Equipos a Presión, directiva 97/23CE transpuesta por el RD 769/1999, según requisitos módulo H. Organismo Notificado Bureau Veritas (0056).
For Sub-pressure Equipments, module H directive 97/23/CE transposed by the RD 769/1999. Notified Body Bureau Veritas (0056).
Pour Equipements sous Pression, directive 97/23CE transposée par le RD 769/1999, selon exigences module H. Organisme Notifié Bureau Veritas (0056).

Montilla, 19 de marzo de 2012

Jose Luis Orobia
General Manager Air Thermodynamic



COMPañIA INDUSTRIAL DE APLICACIONES TÉRMICAS, S.A.

Pol. Ind. Llanos de Jarata. Narciso Monturiol, s/n • Apdo. 145 • 14550 Montilla (Córdoba) • Tel.: 957 652 311 • Fax: 957 652 212 • ciatesa@ciatesa.es

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CERTIFICADO AENOR DE PRODUCTO N° 020 / 003222
AENOR PRODUCT CERTIFICATE N°

Pg. 1/2
2010-09-24

La Asociación Española de Normalización y Certificación (AENOR) certifica que el producto
The Spanish Association for Standardisation and Certification (AENOR) certifies that the product

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MINERAL WOOL

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y elaborado en

and manufactured in

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19200 AZUQUECA DE HENARES (Guadalajara - ESPAÑA)

es conforme con

complies with

UNE-EN 13162:2009 (EN 13162:2008)

Para conceder este Certificado, AENOR ha ensayado el producto y ha comprobado el sistema de la calidad aplicado para su elaboración. AENOR realiza estas actividades periódicamente mientras el Certificado no haya sido anulado, según se establece en el Reglamento Particular RP 20.09.

In order to grant this Certificate, AENOR has tested the product and has verified the quality system used in its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with the stipulations of the Specific Rules RP 20.09.

Fecha de concesión: **2010-09-24**
First issued on:

Fecha de caducidad: **2015-07-14**
Expires on:

AENOR Asociación Española de
Normalización y Certificación

El Director General de AENOR
General Manager

Este certificado anula y sustituye al certificado 020/002979, de fecha 2010-07-14.
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This certificate supersedes certificate 020/002979, dated 2010-07-14.
The partial reproduction of this document is not permitted.

AENOR - Génova, 6 - 28004 MADRID - Teléfono 914 32 60 00 - Telefax 913 10 46 83



CERTIFICADO AENOR DE PRODUCTO N° 020 / 003222
AENOR PRODUCT CERTIFICATE N°

Marca comercial: **PANEL NETO**
Trade mark:

Conductividad térmica (W/mK)	Espesor (mm)	Resistencia térmica (m ² K/W)	Reacción al fuego	Código de designación
Thermal conductivity (W/mK)	Thickness (mm)	Thermal resistance (m ² K/W)	Reaction to fire	Designation code
0,034	30	0,85	A2-s1, d0	MW-EN 13162-T3-WS-MU1-AW0,60-AFr5
0,034	40	1,15	A2-s1, d0	MW-EN 13162-T3-WS-MU1-AW0,70-AFr5
0,034	50	1,45	A2-s1, d0	MW-EN 13162-T3-WS-MU1-AW0,70-AFr5
0,034	60	1,75	A2-s1, d0	MW-EN 13162-T3-WS-MU1-AW0,80-AFr5
0,034	70	2,05	A2-s1, d0	MW-EN 13162-T3-WS-MU1-AW0,80-AFr5

Estimados señores,

Flexicel Industrial, S.L., certifica a CIATESA (Compañía Industrial de Aplicaciones Térmicas, S.A.), que el material suministrado para aislamiento de tuberías (ver listado de referencias más abajo), tiene una clasificación **M1** según norma Española de Resistencia al fuego UNE 23727-90.

Referencias:

- Ref. CIATESA **1910500** – Ref. Flexicel Industrial **9700**
- Ref. CIATESA **1910480** – Ref. Flexicel Industrial **914**
- Ref. CIATESA **1910510** – Ref. Flexicel Industrial **465**
- Ref. CIATESA **1910520** – Ref. Flexicel Industrial **466**
- Ref. CIATESA **1910530** – Ref. Flexicel Industrial **467**
- Ref. CIATESA **1910540** – Ref. Flexicel Industrial **468**
- Ref. CIATESA **1910550** – Ref. Flexicel Industrial **469**

La información aquí expresada, está extraída de las declaraciones provenientes de nuestros proveedores de materia prima debido a que nuestra empresa es únicamente transformadora.

Si necesitan cualquier aclaración pónganse en contacto con nosotros.

Un cordial saludo,



Tamara Pérez

- Dpto. Calidad y Laboratorio -

Telef./Phone: 00 34 93 777 67 27

Fax: 00 34 93 777 51 37

Email: tamara.perez@grupoflexicel.com

W³: www.flexicel.es
www.grupoflexicel.com

Fecha: 29 de noviembre de 2012



**CAU NBR+PVC 70 M1 Negro**

Fecha Rev.: 29/09/2011

Rev.: 2

<u>Ensayos / Propiedades</u>	<u>Dato ó Valor Max.</u>	<u>Valor Min.</u>	<u>Ud.Med.</u>	<u>Método / Norma</u>
Base (Composición)	NBR+PVC		***	
Densidad	80	55	kg/m3	DIN 52275 / PART 2 ISO 845
Estabilidad Térmica	Excelente/Excellent			ASTM C534-02
Conductividad Termica a 50°C	0.036 (0.031 Kcal/mh°C)		W/m°C	ASTM C534-02
Conductividad Termica a -20°C	0.0308 (0.0265 Kcal/mh°C)		W/m°C	ASTM C534-02
Conductividad Termica a 0°C	0.033 (0.0284 Kcal/mh°C)		W/m°C	ASTM C534-02
Conductividad Termica a 10°C	0.037		W/mk	UNE-EN 12667
Conductividad Termica a 20°C	0.034 (0.0293 Kcal/mh°C)		W/m°C	ASTM C534-02
Conductividad Termica a 40°C	0.040		W/mk	UNE-EN 12667
Rango de Temperatura de Trabajo	105	-40	°C	
Absorción de Agua	<=0.2		vol. %	ASTM C534-02
Difusión del vapor de agua (μ)	-	>=7000	(μ)	DIN 52615
Resistencia al Ozono	Sin roturas/Unbroken/Inint errompue			ASTM D1171
Resistencia al Aceite	Excelente/Excellent			
Resistencia a las grasas	Excelente/Excellent			
Resistencia a los agentes atmosféricos	Sin roturas/Unbroken/Inint errompue			ASTM G154-00

Los datos facilitados en la presente Ficha Técnica han sido obtenidos por nuestro proveedor ó por el Grupo Flexigel (*). En ningún caso constituyen garantía jurídica en cuanto a propiedades y/o funcionalidad de la aplicación del material.

**..//.. CAU NBR+PVC 70 M1 Negro**

<u>Ensayos / Propiedades</u>	<u>Dato ó Valor Max.</u>	<u>Valor Min.</u>	<u>Ud.Med.</u>	<u>Método / Norma</u>
Resistencia al fuego "Española"	M1		Categoría	UNE 23727-90
Directiva Reach	Cumple/Meet/Respecter			1907/2006
Directiva RoHS	No cumple/Not Meet/Pas Respector (Calidad especial/Special quality)			2002/95/CE
Contenido en CFC	Libre/Free			SFS 4190 CLASS 1

Los datos facilitados en la presente Ficha Técnica han sido obtenidos por nuestro proveedor ó por el Grupo Flexicel (*). En ningún caso constituyen garantía jurídica en cuanto a propiedades y/o funcionalidad de la aplicación del material.

52, rue Paul Lescop
92000 NANTERRE

t. +33 (0)1 41 37 91 91
f. +33 (0)1 41 37 92 01

finsecur@finsecur.com

DECLARATION DE CONFORMITE



Etablie par :

Nom: Société **FINSECUR** 52, rue Paul Lescop 92 000 Nanterre France

Déclarons que le produit :

Description du produit : **DETECTEUR AUTONOME DECLENCHEUR (NFS61961 09/2007)**

Référence du produit : **LOTUS Plus 1W2C**

Marque commerciale : **FINSECUR**

Satisfait aux directives du conseil des Communautés européennes:

- o 2004/108/CE (directive CEM)
- o 93/68/CEE (22 juillet 1993)
- o 92/31/CEE (28 avril 1992)
- o 73/23/CEE (19 février 1973)

Et est conforme :

- o **DBT** : A la norme européenne **EN 60950-1 (2006)**
- o **CEM** : A la norme européenne **EN 50130-4 (1995) + A1 (1998) +A2 (2003)**
- o **CEM** : A la norme européenne **EN 61000-6-3 (2001) + A11 (2004)**
- o **CEM** : A la norme européenne **EN 61000-6-4 (2001)**
- o **CEM** : A la norme européenne **EN 61000-3-2 (2000) + A2 (2004)**
- o **CEM** : A la norme européenne **EN 61000-3-3 (1995) + A1 (2001)**

Validation :

Nom : S. Dimarco Fonction : Président Directeur Général

Visa :P.O

FINSECUR

52 rue Paul Lescop
92000 NANTERRE

Tél. : 01 41 37 91 91

Fax : 01 41 37 92 01

Siren : 350 589 396 - APE 316D

Lieu et date d'édition

Lieu : Nanterre

Date : 10 avril 2012



Certificat

Certificate
NF-SSI

Systeme de Sécurité Incendie NF-508

N° : SSI 289 A2

Extension
Date de la décision : 2 octobre 2012

NOM ET ADRESSE DU TITULAIRE :

FINSECUR
52, rue Paul Lescop
92000 NANTERRE
France

Site de production du Matériel
Principal
cœur du système

NANTERRE - France

Ce certificat est composé de 2 pages.
Ce certificat n'est valable qu'accompagné du rapport d'associativité N° DA 12 00 04 A
Ce certificat annule et remplace tout certificat antérieur.

Ce certificat n'engage en aucun cas AFNOR Certification quant à la conformité réglementaire de l'installation dans laquelle est implanté le système certifié couvert par le présent certificat.



Ce certificat est constitué de 2 pages



Certificat

NF-SSI Certificate

Certificat NF-SSI N°: SSI 289 A2

Le système certifié, constitué par les matériels principaux, composants et accessoires répertoriés, répond aux exigences du référentiel NF-508 (NF-SSI).

Il autorise la société FINSECUR à apposer la marque NF en application des Règles Générales de la marque NF et des règles de certification de l'application NF- Système de Sécurité Incendie (NF-508) sur les matériels principaux et composants suivants :

REFERENCE DU MATERIEL PRINCIPAL CŒUR DU SYSTEME :

Référence commerciale : **LOTUS Plus 1W2C**

N° d'identification : **DAD 028 G0**

Les composants, matériels principaux et accessoires répertoriés faisant l'objet d'une associativité avec le matériel principal cœur du système référencé ci-dessus figurent dans le rapport d'associativité joint.

Caractéristiques certifiées essentielles :

- les matériels principaux, composants et accessoires répertoriés constitutifs du système certifié ont fait l'objet d'une associativité entre eux.
- les composants et accessoires répertoriés constitutifs du système certifié ont fait l'objet d'une associativité avec le matériel principal (cœur du système certifié),

Ce certificat atteste également que le système qualité du titulaire et de ses fournisseurs de matériels principaux et/ou composants référencés dans le rapport d'associativité joint ont été évalués conformément aux règles de certification de l'application NF-508.

Ce certificat est valable jusqu'au 30 septembre 2013 sous réserve des résultats des contrôles effectués par AFNOR Certification qui peut prendre toute sanction conformément aux règles générales de la marque NF et au référentiel de certification NF-508.

La Directrice Générale

Florence MÉAUX





SYSTEME DE SECURITE INCENDIE

Certificat

Certificate

COMPOSANT NF-SSI

<i>Nature et date de la décision</i>
Extension du 23 avril 2012
N° d'identification : DAD 028 G0

Date de fin de validité du
31 décembre 2014

La Société :
FINSECUR
52, rue Paul Lescop
92000 NANTERRE
France

Pour son usine de :
NANTERRE - France

est autorisée à commercialiser le composant certifié suivant, destiné à être installé dans le(les) SSI certifié(s) NF dont les références commerciales sont listées sur le site Internet www.marque-nf.com, selon les conditions définies dans le référentiel de certification NF-SSI :

Désignation normalisée : **Détecteur autonome déclencheur**
Référence commerciale : **LOTUS Plus 1W2C**
Marque commerciale : **FINSECUR**
Classe : **2 - Non secouru**

Ce certificat annule et remplace tout certificat antérieur.

Ce certificat atteste :

- que le produit désigné est certifié conforme à la norme NF S61-961:2007 et spécifications complémentaires telles que spécifiées dans le référentiel de certification NF-SSI ;
- que le produit est associable à un Système de Sécurité Incendie certifié NF au sens du référentiel NF-SSI ;
- que le système qualité de la société a été évalué conformément au référentiel de certification NF-SSI.

Il n'engage en aucun cas AFNOR Certification quant à la conformité réglementaire de l'installation dans laquelle le produit objet de ce certificat sera utilisé.

Caractéristiques certifiées :

- | | |
|---|-------------------------------|
| - Elément sensible : | Non intégré au boîtier |
| - Nombre de circuit de détection : | 1 |
| - Nombre de points de détection par circuit : | 2 |
| - Tension de commande nominale : | 24 V |
| - Puissance maximale de commande : | 1 W |
| - Divers : | Néant |

Ce certificat NF est valable jusqu'au 31 décembre 2014 sous réserve des résultats des contrôles effectués par AFNOR Certification qui peut prendre toute sanction conformément aux règles générales de la marque NF et au référentiel de certification NF-SSI.

La Directrice Générale

Florence MÉAUX

**PROCES-VERBAL DE CLASSEMENT
DE REACTION AU FEU D'UN MATERIAU**
prévu à l'article 5 de l'arrêté du 21 Novembre 2002 modifié

VALABLE 5 ANS à partir du 24/02/2012

N° 15698-12

- MATERIAU PRESENTE PAR : Lydall Filtration / separation SAS
Z.I.Saint Rivalain – BP 9
56310 Melrand
France
- REFERENCE COMMERCIALE : GLASS FIBER MEDIA -
Product : Ashrae - Basis weight 68 gsm- LOI 7%
- DESCRIPTION SOMMAIRE : Tissu à base de fibre de verre et matière organique
Masse surfacique : 70 g/m²
Epaisseur : 0,30 mm
Coloris présenté : Blanc
- NATURE DES ESSAIS : Essai pour brûleur électrique (NF P 92503)
- CLASSEMENT :

M1

DURABILITE DU CLASSEMENT : **non limitée a priori.**

Compte tenu des critères résultant des essais décrit dans le rapport d'essai annexé n° : 15698-12 du 24/02/2012

Ce procès verbal atteste uniquement des caractéristiques de l'échantillon soumis aux essais et ne préjuge pas des caractéristiques de produits similaires. Il ne constitue donc pas une certification de produits au sens de l'article L. 115-27 du code de la consommation et de la loi du 3 juin 1994.

Au Bouchet, le 24/02/2012

Chef du Laboratoire
"Essais au Feu"

H. BARBIER



Responsable de l'essai

M LUKUSA





Test Report

According to DIN 53438
Surface Ignition
(Ignition by a small flame)

Report No.: 3016-10
From: S. Kyburz
Test Date: 08.07.2010
Page: 1/2

Customer: Lydall Filtration/Separation S.A.S.

Order No.: 0007

Name of specimen: ASHRAE 68 g/m²

Description of specimen in detail: Reference: Glass fiber media;

Efficiency: F5 to F9;

Basis weight 68 g/m²;

LOI maximum: 11%

Manufacturer: Lydall Filtration/Separation S.A.S.

Test Requirements DIN 5510 Part 2

Surface Ignition


Result: DIN 5510 Part 2: S1

Surface Ignition DIN 53438: F1 / 0.4mm

Remarks: This report is valid for 3 years after the execution of the test.

The fire test laboratory is recognized by the German Federal Railway Authority.

Head of Laboratory: 
S. Busch, Lantal Textiles AG

Operator: 
S. Kyburz, Lantal Textiles AG

This test report should only be copied as full version. A shortened version can only be copied or published with an approval of the test laboratory.

Test Report

According to DIN 53438
Surface ignition
(Ignition by a small flame)

Report No.: 3016-10
From: S. Kyburz
Test Date: 08.07.2010
Page: 2/2

Test in the large burning chamber according to DIN 50050 T2

Samples conditioned according to DIN 50014 > 48h 23/50-2

Room Temperature: 24.5 °C / 53.1% Humidity / Pressure 955.5 hPa

Sample no.: 3016 / 1-5

Sample Size (length x width x thickness) in mm: 230 x 90 x 0.4

Results:

Sample	1	2	3	4	5	Mean
Thickness (Distance from the lower edge) 40 mm:	0.40	0.45	0.40	0.40	0.40	0.41
Thickness (Distance from the lower edge) 100 mm:	0.40	0.45	0.40	0.45	0.40	0.42
Thickness (Distance from the lower edge) 160 mm:	0.40	0.45	0.40	0.40	0.40	0.41
Mean	0.40	0.45	0.40	0.42	0.40	0.41
Test Result, Test according to:	DIN 53438 Surface Ignition					
Ignition time in sec	15	15	15	15	15	15.0
Glow duration in s	2	2	2	2	2	2.0
190 mm reached after sec	no	no	no	no	no	no

Remarks:

