




**Maintenance schedule**

COMPONENT		MAINTENANCE PERIOD EVERY		
		3 Months	6 Months	1 Year
 <b>FANS WARNING:</b> do not reach into the fan while the fan wheel is running.	Check for soiling, damage corrosion, and proper fixing.	X		
	Check bearings noise.	X		
	Measure the current and power consumption.		X	
	Cleaning to preserve the function.	X		
<b>AIR FILTERS</b>	Check for soiling, damage, corrosion.	X		
	Check state of filter.	X		
	Clean or replace if necessary.	X		
	Carry out controls more frequently in dusty environments.	X		
<b>NEW AIR FILTER (if installed)</b>	see air filter. Clean or replace	X		
<b>CONTROL SYSTEM</b>	Check for proper and functionally correct installation and surrounding conditions.	X		
	Check the function of the LEDs of the display's control system and the alarms.	X		
	Check the connections for electrical and mechanical function.		X	
	Check the functional elements (e.g. operational controls and display devices).		X	
	Check the electrical/electronic and pneumatic input signals (e.g. sensors, remote controllers, command variable) for compliance with nominal values.		X	
	Check control function, control signals and safety chains.		X	
	Adjust control function and control signals.		X	
<b>HUMIDIFIER (if installed)</b>	See Endlosure A, F, G.			
 <b>SWITCH CABINET POWER CIRCUITS WARNING:</b> electrical cables and electrical components of the air conditioner are under voltage.	Check the power supply on all phases.		X	
	Check the connections for electrical and mechanical function.		X	
	Check the power supply at all terminals.		X	
	Measure power consumption at all connected consumers.		X	
	Set, adjust and tighten the functional elements (e.g. operational controls and display devices).		X	
	Check safety equipment, e.g. thermal switch.		X	
	Replace fuses (every 2 - 3 years)			X
	Check protective covers for completeness.			X
<b>COOLING WATER (W, F and H only)</b>	Check cooling water circuit.	X		
	Check for damage, leaks and proper fixing.	X		
	Make sure there is no loss of water.			
<b>COOLING WATER (W, F and H only) Only for closed circuits:</b>	Make sure that the water pump works properly.		X	
	Deaerate circuits.		X	
	Check whether the heat transfer medium of circuit-connected system is frost-proof.		X	
	Check safety equipment for function.		X	
	Check glycol % comparing minimum yearly ambient temperature.		X	
 <b>REFRIGERATION CIRCUIT CAUTION:</b> Fluoride refrigerants increase the greenhouse effect and are subject to restrictions and norms, according to the national and European regulations.	Measure the working pressures and temperatures (to be done by a refrigeration technician).		X	
	Check the power consumption, measure head temperature and check for possible abnormal operating sounds.		X	
	Make sure that there is no frost building up on the evaporator and compressor.	X		
	Check function of all regulating devices (power regulators, valves, etc.).	X		
	Check safety devices for function. If the quantity of the refrigerant is not enough, detect the leakage if any. Then reclaim, void, repair and charge.		X	
	If the quantity of refrigerant is not enough, it needs to be reclaimed and refilled with completely new refrigerant.			
	Check oil level at the sight glass (where sight glass is available).	X		
	Carry out a test to check humidity inside oil			X
	Check crankcase heater for function.		X	
	Check digital modulation solenoid valve	X		

COMPONENT		MAINTENANCE PERIOD EVERY		
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<b>ELECTRONIC EXPANSION VALVE and SUPERHEATING CONTROLLER (if installed)</b>	See appropriate manual.			
<b>EXTERNAL CONDENSER/ Dry cooler (if installed)</b>	See appropriate manual.			
<b>CHILLED WATER CIRCUIT</b>	Make sure there is no loss of water.		X	
	Deaerate the cooling water circuit using the vent valve near unit hydraulic connections.		X	
	Check that the cold water supply is ensured.		X	
	Check the temperature and the pressure of the water on the inlet and outlet side using thermometers and manometers if installed		X	
	Check the proper function of the three/two-way valve.		X	
	Make sure that the system is filled with the prescribed amount of glycol and that there is no frost in the hydraulic circuit.		X	
	In case of water loss, it needs to be refilled. Make sure the glycol concentration is correct.		X	
	Check that the water circulation is in perfect order.		X	

## 11.6 - Refrigeration circuit

**WHEN REPAIRING THE REFRIGERATION CIRCUIT, COLLECT ALL REFRIGERANT IN A CONTAINER: DO NOT ALLOW IT TO ESCAPE.**

- When removing (for repairs) or charging refrigerant, it must always be done on both the high and low pressure sides of the compressor simultaneously.
- The compressor copper plated steel connections should be welded with a silfos material containing a minimum of 5% silver.

### 11.6.1 - Refrigerant charge of the water-cooled units (W, F and H)

1. Start the unit as described in par. 8.1.
2. Manually start the compressor (ensure the unit is not in dehumidification).
3. Wait a few minutes to allow conditions to stabilize.
4. Check the refrigerant circuit using a leak detector. If there is a leak recharge the unit until the working conditions of the entire refrigeration circuit have become normal.
5. Using a manometer, check that the evaporating temperature is above 0°C.
6. Verify that the superheat is 6-8 K (to do this refer to par. 10.1).

### 11.6.2 -Oil charge R410A

The oil to be used when topping up (only if there are any leaks) is **EMKARATE RL 32-3 MA** or **Mobil EAL Arctic 22CC** (see Tab. i and Tab. j).

**Tab. i - EMKARATE RL 32-3 MA oil**

Viscosity at 40 °C	31.2 cSt
Viscosity at 100 °C	5.6 cSt
Viscosity index (ISO Grade)	32

**Tab. j - Mobil Arctic EAL 22 CC oil**

Density (at 15 °C)	0.967 kg/l
Flash point (C.O.C.)	245 °C
Pour point	<-54 °C
Viscosity at 40 °C	23.6 cSt
Viscosity at 100 °C	4.7 cSt
Viscosity index (ASTM D2270)	130

These oils rapidly absorb the humidity present in the air when they are exposed to the atmosphere.

If the oil absorbs humidity, the ester molecules can break down, forming acidity.

We therefore recommend exposing the oil for as short time as possible (no more than a few minutes) and, in case of topping up, using exclusively the oil indicated on the refrigerating compressor.

Normally 1 or 2-litre cans are available for this purpose; once they are opened, they must be completely used up. They must not be used after a long period, as they absorb humidity.