

***LAB 07M***

***LAB 09M***

***LAB 11M***

**Dimplex**

**Installation and  
Operating Instructions**

English



**Air-to-Water Heat  
Pump for Outdoor  
Installation**



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## 1 Warnings regarding the documentation

### 1.1 Use in compliance with the documentation

The Dimplex LAB units are constructed according to the European technical standards and safety regulations. The heat pump is designed and built for heating and domestic hot water production (DHW). In the event of improper use, dangers to the user or third parties may arise, as well as damage to the heat pump and other objects. Any use not expressly indicated in this manual is not permitted.

#### **i** NOTE

Dimplex will not assume any responsibility for damage caused due to failure to comply with these instructions.

### 1.2 Safe keeping of the documentation

The installation manuals should be issued to the end user of the heating system as part of the handover and training process. It is then the responsibility of the user to keep the manuals safe for future use by maintenance engineers.

#### **⚠** ATTENTION!

READ THIS DOCUMENT CAREFULLY.

The installation of this heat pump must be carried out by a competent person, who is suitably trained and qualified, including any stipulations laid down by law. The appliance must be installed in such a way as to enable maintenance and/or repairs to be carried out. The appliance warranty does not cover the costs for fork lift trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

#### **i** NOTE

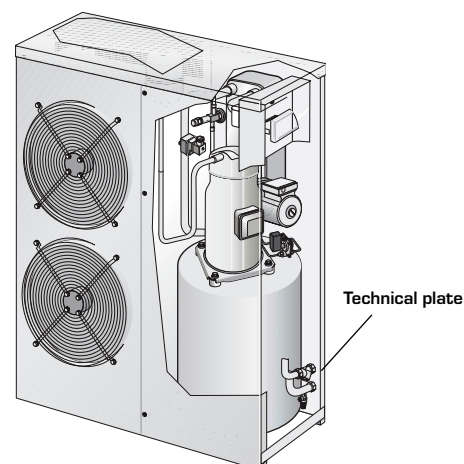
The warranty will be invalid if the advice given within the Installation instructions is not followed.

## 2 Fundamental safety rules

You are reminded that you must adhere to the following safety rules:

- This appliance is not suitable for use by persons (including children) with limited physical, sensory, or mental capacities or those lacking experience or knowledge, unless they are supervised or instructed regarding the use of the appliance by a person who is responsible for their safety. Children must always be supervised to ensure they do not play with the appliance
- It is prohibited to carry out any maintenance work before the unit has been disconnected from the mains power supply by switching off the master switch at the distribution board and also the main power switch on the product casing.
- It is prohibited to modify the safety devices, or make any physical adjustment to the heat pump without the manufacturer's written authorisation.
- It is prohibited to pull, detach, or twist the electrical cables coming from the unit even if it is disconnected from the electrical mains.
- It is prohibited to store flammable substances near to the unit.
- It is prohibited to touch the appliance when you are barefoot, or parts of the body are wet or damp.
- It is prohibited to leave the packing materials within the reach of children.

### 2.1 Technical plate



LAB can be identified by:

- **Packing label**  
reporting the identification data of the product.
- **Technical plate**  
positioned in the hydraulic connections side panel

**i NOTE**

Tampering, removal, lack of the identification plate or other does not allow the safe identification of the product and will make any installation or maintenance operation to be performed difficult.

## 2.2 Safety precautions and regulations

**i NOTE**

The heat pump must be installed by a qualified and suitably trained Engineer in accordance with the current legislation

**i NOTE**

Dimplex will not assume any responsibility for damage due to failure to follow these instructions. Before beginning any work, READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS. All the staff involved during installation must have thorough knowledge of the working and any dangers that may arise during installation.

**⚠ ATTENTION!**

The refrigerant circuit is under pressure and can operate at very high temperatures. The refrigerant circuit must only be maintained by a qualified refrigerant engineer.

**⚠ ATTENTION!**

The heat pump is delivered with a sufficient quantity of R407C refrigerant for operation. This refrigerant is chlorine-free and does not damage the ozone layer. R407C is not flammable. However, all maintenance operations must be carried out exclusively by a specialised refrigerant engineer using suitable protective equipment.

**Danger of electrical discharge! Before opening the heat pump, completely disconnect the appliance from the power mains.**

## 3 Receiving the product

### 3.1 Movement

Before handling the unit, please make note of the dimensions, weights, centre of gravity and lifting points; then verify that the equipment to be used for lifting and positioning is adequate and complies with the safety regulations in force. Pay special attention to the loading, unloading, and lifting operations to avoid any danger to people or damage to the casing or components of the heatpump. It is strictly prohibited to place objects on top of the unit. The handling staff must be provided with suitable individual protective equipment. It is strictly prohibited to stand below the unit, during lifting.

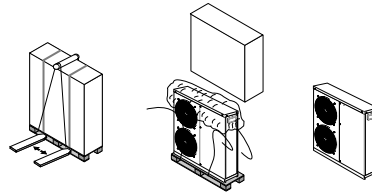
### 3.2 Position

LAB must be installed outdoors in a suitable site that provides access for all the necessary maintenance. The device should always be installed on a permanently smooth, even and horizontal surface capable of bearing the weight of the machine. The entire frame should lie directly on the ground to ensure a good sound-proof seal and to prevent the water-bearing components from becoming too cold. If this is not the case, additional insulation measures may be necessary. It must be possible to carry out maintenance work without hindrance. This is ensured if the clearance displayed below is maintained. If the heat pump is installed in partially windy areas, a windbreak should be provided to avoid erratic operation of the fan.

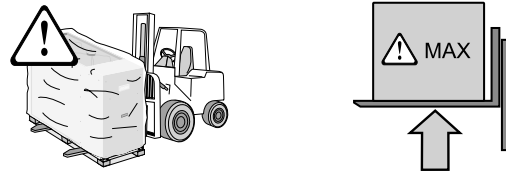
**i NOTE**

The appliance must be installed in such a way as to make maintenance and/or repairs to be carried out possible. The appliance warranty does not cover the costs for ladder trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

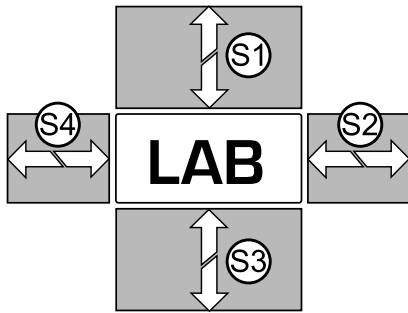
LAB 07M – 09M – 11M



HANDLING EXAMPLE



### 3.3 Minimum maintenance area



Mod.	MINIMUM TECHNICAL SPACES			
	S1	S2	S3	S4
mm				
<b>07M</b>	150	500	150	500
<b>09M</b>	250	500	250	500
<b>11M</b>	300	500	300	500

## 4 Description and choice of unit

The air source heat pumps in the LAB series have been designed to satisfy a properties heating and domestic hot water production.

The machines are optimised for operation in heating mode. Thanks to the use of a high efficiency scroll compressor the unit can operate with external air temperature as cold as  $-30^{\circ}\text{C}$ .

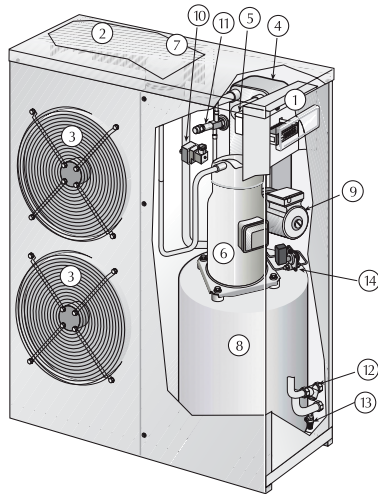
Electric resistances of the compressors are supplied as standard with all models.

The LAB heat pumps can be used in:

- under floor heating
- Radiators
- Fan Convectors
- Domestic Hot water productions
- A mixture of all of the above

## 5 Description of components

### Main components



- 1 Electric control board
- 2 Air-side heat exchanger
- 3 Ventilation Unit
- 4 Water-side heat exchanger
- 5 High pressure pressure switch
- 6 Compressor
- 7 Expansion vessel
- 8 Storage tank
- 9 Pump
- 10 Low pressure pressure switch
- 11 Thermostatic valve
- 12 Water filter
- 13 Safety valve
- 14 Differential pressure switch

### 5.1 Refrigeration Circuit

#### Compressor

High efficient scroll set on anti-vibration mounts, activated by a 2-pole electric motor with built in heat protection. The compressor is supplied as standard with anti-freeze protection which operates automatically then the unit is connected to the mains supply.

#### Air-side coil heat exchanger

Made with copper pipes and aluminium louvered fins. Fitted with protective grill.

#### Water-side plate heat exchanger

Externally insulated with closed cell material to reduce heat loss.

#### Liquid separator

Positioned at compressor intake to protect from refrigerant return.

#### Expansion valve

Mechanical valve with a capillary tube that regulates the flow of refrigerant gas to the evaporator, depending on the heat load.

#### Filter drier

Mechanical dehydrator filter that removes impurities and any traces of humidity present in the refrigerant circuit.

#### Liquid indicator

Used to check the refrigerant gas load and any presence of humidity in the refrigerant circuit.

#### Solenoid valve

The valve closes when the compressor switches off, blocking the flow of refrigerant gas to the evaporator.

#### 4 way valve

Reverses the flow of refrigerant for the defrosting cycle.

#### One-way valve

Allows one-way flow of the refrigerant.

#### Liquid accumulator

Used to keep the refrigerant gas in the liquid state when the machine accumulates it excessively during functioning.

## 5.2 Frame and fans

#### Support frame

Made from weather resistant, powder coated galvanised sheet steel.

#### Ventilation Unit

Helical type, balanced statically and dynamically. The electric fans are protected electrically by magnet-circuit breakers and mechanically by anti-intrusion metal grids, according to the IEC EN 60335-2-40 Standard.

## 5.3 Hydraulic circuit

#### Differential pressure switch

Positioned on the inlet and outlet of heat circuit water on the evaporator, it measures the pressure loss across the evaporator, which is used to ensure there is adequate water flow.

#### Water filter

This allows to block and eliminate any impurities present in the hydraulic circuits. It contains a filtering mesh with holes that do not exceed one millimetre. It is indispensable in order to prevent serious damage to the plate exchanger.

#### Pump

#### Expansion vessel



## 5.4 Safety and control components

### High pressure switch

Placed on high pressure side of the the refrigeration circuit the high pressure switch prevents the compressor from operating if abnormal working. This switch is calibrated during manufacture and should not be adjusted by the installer.

### Low pressure transducer

Placed on the low pressure side of the refrigeration circuit, it measures the working pressure and generates a pre-warning in case an abnormal pressure occurs.

### High pressure transducer

Placed on the high pressure side of the refrigeration circuit, it measures the working pressure and generates a pre-warning in case an abnormal pressure occurs.

## 5.5 Electric components

### Control board

Controls all aspects of the heat pump operation.

## 5.6 Electronic control

### Modu-Control

The controller allows:

- Temperature control of the output water with proportional-integral algorithm: maintains average output temperature at value set
- Intelligent defrost program uses pressure drop in the refrigeration system to determine when the coil is effectively defrosted, avoiding unnecessary defrosting
- Defrosting by cycle reversing: to overcome more extreme ambient conditions
- Weather compensation set point control as standard
- Condensation check based on the pressure rather than on temperature for absolute stability (with revs. adjuster accessory )
- 5 temperature probes and 2 pressure transducers
- Pre-alarms with automatic reset: in the case of alarm, a certain number of re-starts are allowed before the heat pump is blocked from operation
- Alarm on the  $\Delta t$ : to identify wiring errors (reverse rotation) or blocked cycle reversing valve
- Compressor functioning hours count
- Compressor peak count
- Historical alarms
- Auto-start after voltage drop
- Local or remote control (remote control is supplied as optional extra)
- Display of the state of the unit:
  - a) Voltage presence
  - b) Compressor ON/OFF
  - c) Current operation mode (Heating / Cooling)
  - d) Alarm active indication
- Probes, transducers and parameters display
  - a) Water outlet
  - b) Water inlet
  - c) Coil temperature
  - d) Pressing line gas temperature
  - e) External air temperature (heat pumps with DCP)
  - f) Flow pressure
  - g) Intake pressure
  - h) Temperature error (sum of the proportional and integral error)
  - i) Stand-by times for start-up/switch-off of the compressor
- Alarms management
  - a) Low pressure
  - b) High pressure (primary alarm: switch directly blocks supply to compressor)
  - c) High discharge temperature
  - d) Anti-freeze
  - e) Water differential pressure switch
  - f) Alarm on the  $\Delta t$
- ON/OFF external contact
- Season switching from external contact. For further information on this function please contact Dimplex technical department.

## 6 Selection criteria

### 6.1 Selection criteria

The units, are not suitable for installation in salty environments with out an additional treatment to the heat exchanger. The maximum and minimum limits for water flow rate to the heat exchanger are indicated by the pressure drop diagram curves. For functioning limits, please refer to the below diagrams, valid for  $\Delta t = 5\text{ }^{\circ}\text{C}$ .

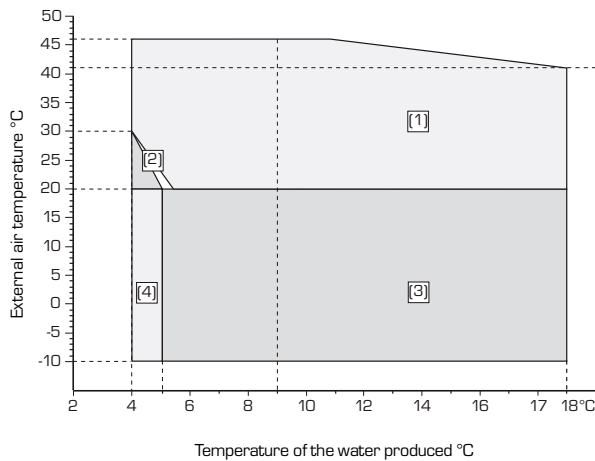
#### **⚠ ATTENTION!**

If the machine is positioned in a particularly windy zone, a windbreak should be provided to avoid unstable operation of the fan.

#### **i NOTE**

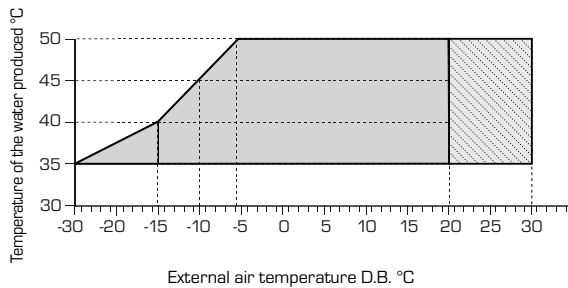
The machine must not be operated outside the limits shown in the diagram.

FUNCTIONING LIMIT (COLD)



(1) = Standard Functioning	(3) = DCPX
(2) = Water/Glycol	(4) = DCPX + Water/Glycol

FUNCTIONING LIMIT (HOT)



## 7 Technical data

Device information for air-to-water heat pump for heating purposes					
<b>1</b>	<b>Type and order code</b>	LAB 7M	LAB 9M	LAB 11M	
<b>2</b>	<b>Design</b>				
2.1	Degree of protection according to EN 60 529	IP X4	IP X4	IP X4	
2.2	Installation location	Outdoors	Outdoors	Outdoors	
<b>3</b>	<b>Performance data</b>				
3.1	Operating temperature limits:				
	Heating water flow/return flow <sup>1</sup>	°C / °C	up to 52 / above 4	up to 52 / above 4	up to 52 / above 4
	Air	°C	-15 to +25	-15 to +25	-15 to +25
3.2	Temperature spread of heating water (flow/return flow) at A7/ W35	K	5	5	5
3.3	Heat output / COP at:				
	A-7/W35	kW/--	5.1 / 2.63	6.3 / 2.63	7.2 / 2.45
	A7/W35	kW/--	7.7 / 3.69	9.5 / 3.66	11.4 / 3.51
	A7/W45	kW/--	7.5 / 2.87	9.2 / 3.03	10.9 / 2.88
	A7/W52	kW/--	7.4 / 2.36	8.9 / 2.60	10.4 / 2.43
	A2/W35	kW/--	5.9 / 2.97	7.1 / 2.80	9.7 / 3.08
	A2/W45	kW/--	5.8 / 2.41	7.0 / 2.41	9.7 / 3.11
3.4	Sound power level <sup>5</sup>	dB	69.2	69.8	70.8
3.5	Sound pressure level at a distance of 1m (air outlet side) <sup>5</sup>	dB	54.8	55.5	55.8
3.6	Heating water flow and internal resistance	m <sup>3</sup> / h / Pa	1.4 / 8.3	1.6 / 57	2.0 / 55
3.7	Available head of circulation pump with flow rate for ΔT of 5 (max speed setting)	kPa	58	9.5	8
3.8	Capacity of water contained within unit	L	1.5	2.4	2.6
3.9	Construction material of heat exchanger		inox/AISI 316	inox/AISI 316	inox/AISI 316
3.10	Refrigerant; total filling weight	type/kg	R407C/2.52kg	R407C/2.94kg	R407C/3.83kg
<b>4</b>	<b>Dimensions, connections and Weight</b>				
4.1	Device dimensions without connections <sup>2</sup>	H x W x L mm	850 x 931 x 367	1000 x 931 x 367	1250 x 1151 x 441
4.2	Device connections to heating system	Inch	F 1 1/4"	F 1 1/4"	F 1 1/4"
4.3	Weight of the transportable unit(s) incl. Packaging	kg	80	90	133
<b>5</b>	<b>Electrical connection</b>				
5.1	Nominal voltage; fuse protection	V / A	230/20	230/32	230/32
5.2	Nominal power consumption <sup>1</sup> A7/ W35	W	2169	2666	3237
5.3	Starting current with soft starter	A	32	32	32
5.4	Nominal current A7/W35 / cos φ	A/--	10.7/10.88	13.2/10.88	15.3/0.92
5.5	Power consumption of the fan	W	140	140	140
5.6	Power consumption of the pump speed 1	W	115	115	115
	Power consumption of the pump speed 2	W	165	165	165
	Power consumption of the pump speed 3	W	205	205	205
<b>5.5</b>	<b>Complies with the European safety regulations<sup>3</sup></b>				
<b>7</b>	<b>Additional model features</b>				
7.1	Defrosting		Automatic	Automatic	Automatic
	Type of defrosting		Reverse circulation	Reverse circulation	Reverse circulation
	Defrosting tray included		No	No	No
7.2	Heating water in device protected against icing <sup>4</sup>		Yes	Yes	Yes
7.3	Performance levels		1	1	1
7.4	Controller internal / external		Internal	Internal	Internal

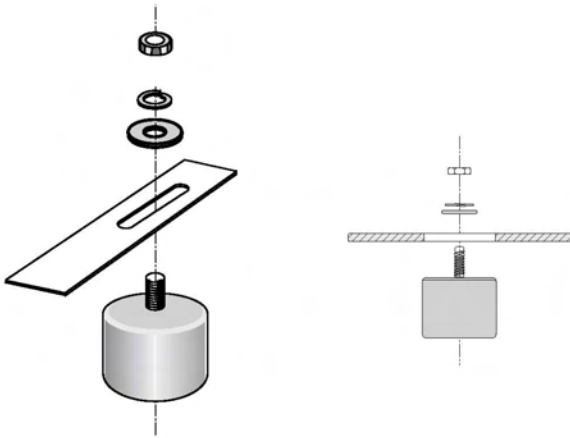
1. This data indicates the size and capacity of the system according to EN 14511 which includes the power consumption of the pump. For an analysis of the economic and energy efficiency of the system, other parameters, particularly the defrosting capacity, the bivalence point and regulation, should also be taken into consideration. The specified values, e.g. A7/W35, have the following meaning: 7°C external air temperature and 35°C heating water flow temperature.
2. Note that additional space is required for pipe connections, operation and maintenance.
3. See CE declaration of conformity.
4. Device is only protected whilst power supply is maintained and unit is turned on.
5. Sound levels determined to BS EN ISO 3744.

## 8 Anti-vibration mounts position

The anti-vibration mounts are available as an optional extra.

Each kit includes four anti-vibration mounts along with the fasteners necessary for assembly. Please pay particularly attention when positioning the unit during the assembly of the anti-vibration mounts, and remember that the surface on which the unit will be positioned must be perfectly horizontal and capable of bearing the weight of the unit.

### 8.1 Installation of anti-vibration mounts

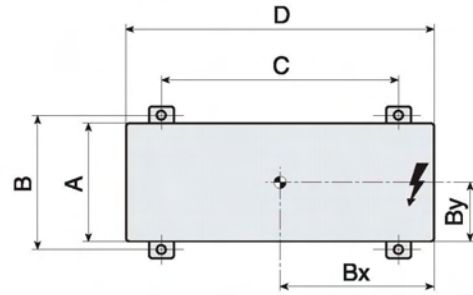


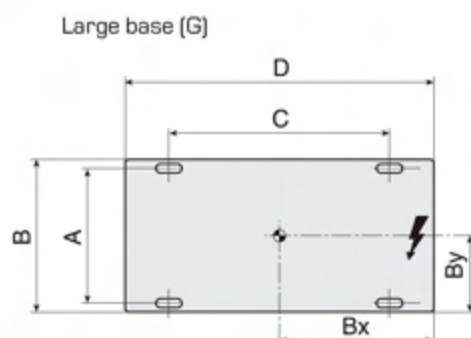
### 8.2 Dimensions and positions anti-vibration

Base version LAB (unit without water)

LAB	Socle	Bx (mm)	By (mm)	A (mm)	B (mm)	C (mm)	D (mm)
07M	P	280	140	334	352	650	900
09M	P	300	155	334	352	650	900
11M	P	320	185	408	435	660	1120

Small base (P)





## 9 Hydraulic circuit

### 9.1 External hydraulic circuit recommended

The following additional items are required in addition to the heat pump

- Pump
- Buffer tank
- Expansion vessel
- Pressure relief valve
- Air purge valve
- Manual cut-off valves
- High pressure flexible joints
- Manometer
- Flow switch
- Cables for connection to the mains supply
- Interconnecting pipe work between the heat pump, heating system and other components.

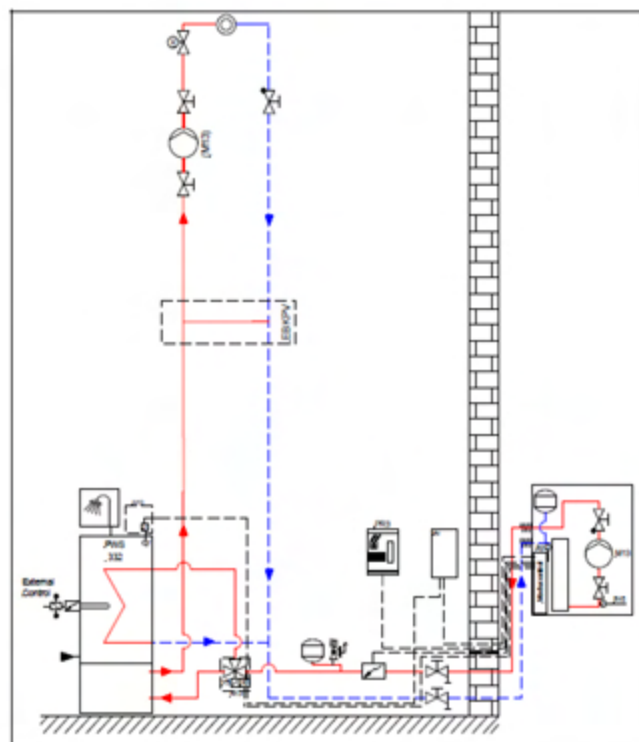
#### **i** NOTE

The hydraulic pipes connected to the machine must be adequately sized for the actual water flow rate required by the system to guarantee a constant flow to the heat exchanger. The installation of manual cut-off valves between the unit and the rest of the system is mandatory. Failure to comply with this will invalidate the warranty.

### 9.2 Draining hydraulic circuit

A drain cock must be installed in the lowest part of the hydraulic circuit to drain the liquid from the heating circuit. The drained off liquid should be disposed in accordance with current legislation and in accordance with the manufacturers of the glycol or inhibitors if these products were used. To assist the liquid to drain from the hydraulic circuit the air bleed valve on the LAB heat pump should be loosened.

### 9.3 LAB recommended hydraulic circuit (°)



#### Integration diagram

Heat pump included:

- Moducontrol
- Circulation pump
- Expansion panel

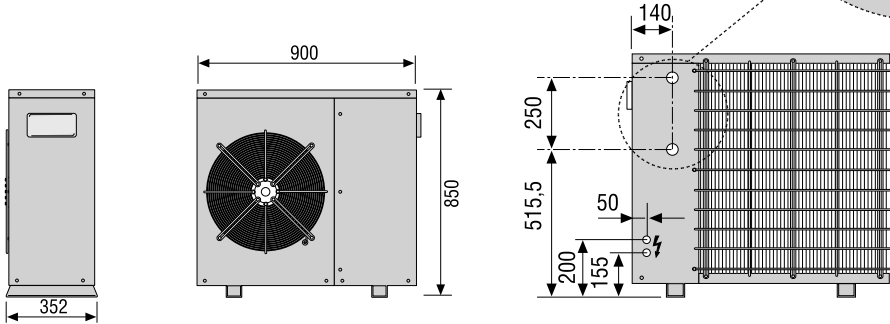
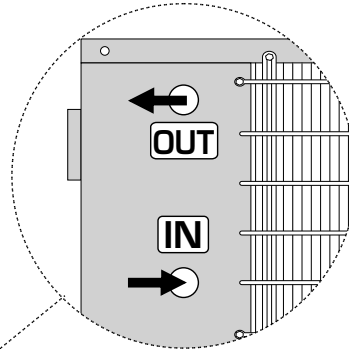
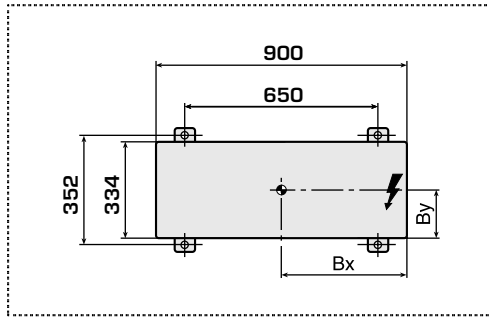
External components:

- Combination tank
  - 100 l buffer
  - 300 l hot water
- Inline electric heater
- Safety valve
- Expansion vessel (if 2 l are not sufficient)
- 3-way valve
- Hot water thermostat
- Flange heater DHW with external control

# 10 Hydraulic and electrical fittings position

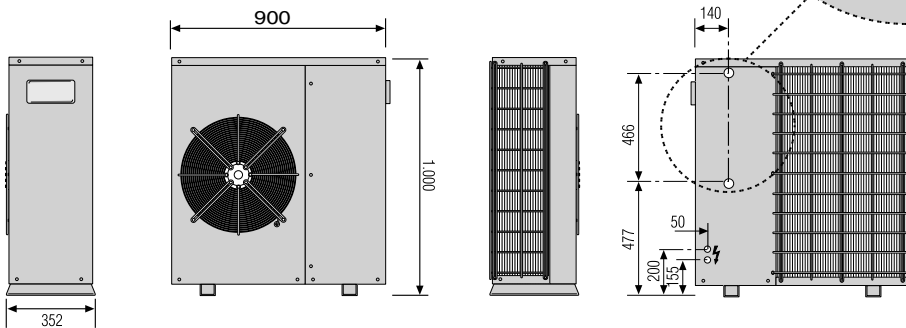
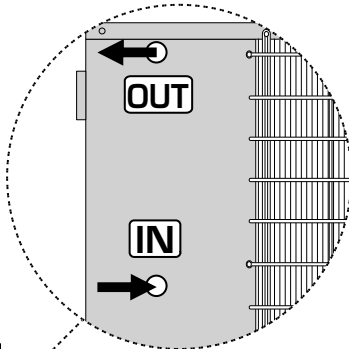
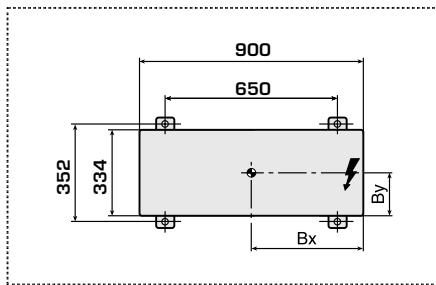
## 10.1 LAB 07M

English



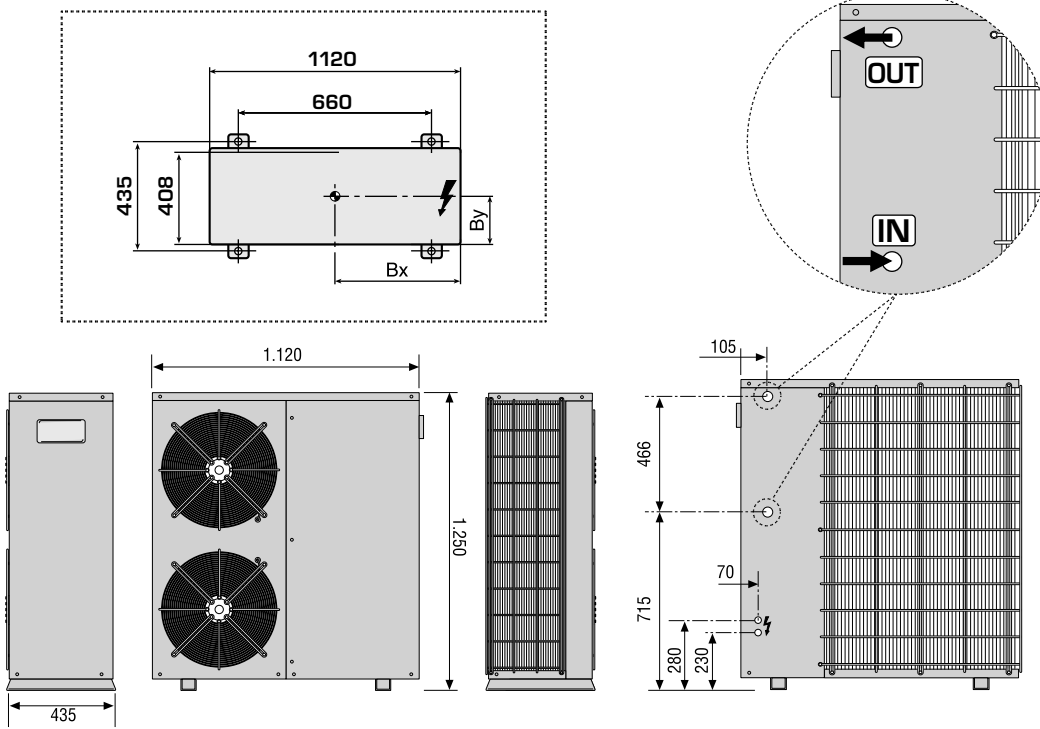
LAB	Bx (mm)	By (mm)
	280	140

## 10.2 LAB 09M



LAB	Bx (mm)	By (mm)
09M	300	155

### 10.3 LAB 11M



LAB	Bx (mm)	By (mm)
11M	320	185

## 11 Electric connections

### **i** NOTE

The electrical installation and maintenance must be carried out by an engineer IN POSSESSION OF THE NECESSARY QUALIFICATIONS REQUIRED BY LAW. They must be suitably trained and informed of the risks related to this work.

### **i** NOTE

The specification of the electrical cables and the related components must be determined by an ENGINEER QUALIFIED TO DESIGN ELECTRICAL SYSTEMS, in accordance with the international and local regulations.

### **i** NOTE

During installation, refer to the electrical diagram supplied with the appliance. The electrical diagram along with the manuals must be kept in good condition and KEPT FOR FUTURE REFERENCE FOR ANY FUTURE MAINTENANCE ON THE UNIT.

### **i** NOTE

It is mandatory to verify that the machine is watertight before making the electrical connections and it must only be powered up after the hydraulic and electrical works have been completed.

The LAB heat pumps are completely wired at the factory and only require connection to the electrical mains supply. It is essential to verify that the electrical supply is capable of supplying the heat pump when also taking into consideration any other machines that may operate at the same time.

### Lines and electrical data of the unit

### **i** NOTE

The cables for connecting to the mains are not provided.

The cross-sections of the cables shown in the table below are recommended for a maximum length of 50 m. For greater lengths, the Installation ENGINEER is responsible for the cable sizing and the earth connection, according to:

- The length
- The type of cable
- The absorption of the unit and the physical location, and the ambient temperature.

### LAB - (230 V Single-phase)

Model	Power supply voltage	Sect A (mm <sup>2</sup> )	Sect B (mm <sup>2</sup> )	Earth (mm <sup>2</sup> )	IL (A)
LAB 07M	230 V	4	0.5	4	20
LAB 09M	230 V	6	0.5	6	25
LAB 11M	230 V	6	0.5	6	32

#### Key:

Sect A = Power supply  
Sect B = Remote panel

IL = Line switch

### **i** NOTE

Check the tightening of all power wire clamps on commissioning and after 30 days from start-up. Subsequently, check the tightening of all the power clamps every six months. Loose terminals can cause overheating of the cables and components.

## 12 Initial Start-up

### 12.1 Preliminary operations

### **⚠** ATTENTION!

Before carrying out the checks indicated below, make sure that the unit is disconnected from the electricity supply.

- Make sure that the air inlet grills are clean and free from obstacles.
- Make sure that the fans can operate freely without any obstruction. In particular, ensure that packaging, leaves, snow or any other obstacle could prevent the fans from turning have been removed.

### 12.2 Electrical checks, on the unit without power

- Check that the main power cables are suitably sized, for the electrical load and local environmental conditions, and that the unit has been appropriately earthed.
- Check that all the electrical connections have been made correctly and all the terminals adequately tightened.

### 12.3 Electrical controls on the live unit

The following operations are to be carried out when the unit is not live.

- Use a Voltmeter, to check that the RMS supply voltage is equal to 230V ±10%
- Turn on the master switch. Check that the display comes on after a few seconds and indicates that the heat pump is off.



## 12.4 Hydraulic circuit controls

- Check that the heating system has been flushed and the washing water drained out before the unit is connected to the system.
- Check that all the hydraulic connections have been made correctly and that the specifications on the rating plates have been followed.
- Check that the hydraulic system is filled and under pressure and also make sure that no air is present; if so, bleed it.
- Check to make sure that any cut-off valves in the system are correctly opened.
- The anti-freeze control managed by the electronic regulation and by the temperature probe located at the outlet of the evaporator is to prevent the formation of ice when the water flow rate is too low. Correct operation can be checked by progressively increasing the anti-freeze set-point until it passes the outlet water temperature and keeping the water temperature controlled with a high precision thermometer, verify that the unit is off and generates the respective alarm. After this operation, take the anti-freeze set-point back to its original value.

## 12.5 Refrigeration circuit controls

- Check the refrigeration circuit for any oil spots which would indicate possible leaks (caused by transport, handling, or other)
- Check the refrigeration circuit for any oil spots which may be a sign of leaks (caused by transport, handling, or other)
- Verify that the refrigeration circuit is pressurised.
- Check that all the refrigeration service outlets are closed with caps; their absence could cause refrigerant leaks.

## 12.6 Refrigeration circuit checks

Check for any refrigerant gas leaks particularly around pressure plugs, pressure transducers and pressure switches. Vibrations during transportation may have loosened the connections.

## 12.7 System loading/unloading

During the winter period, in the event of the system pause, the water in the condenser can freeze, causing irreparable damage to the condenser itself, the complete discharge of the refrigeration circuits and, at times, damage to the compressors. To prevent the danger of the hydraulic circuit freezing, the following solutions are possible.

Circuit without glycol:

- Complete discharge of the water from the heat exchanger at the end of the season and re-filling at the start of the successive season, by means of a discharge valve, which must be installed by the installer.
- Using the heat exchanger heating resistances (accessory). In this case the resistances must always be supplied with electrical power for the entire period of possible freezing (machine in stand-by).

Circuit with glycol:

- Operation with glycol/water fluid, with a percentage of glycol chosen based on the minimum outdoor temperature expected. In this case you must take into account the different outputs and absorption of the chiller, the sizing of the pumps, and the output of the terminals.

## 13 Ethylene glycol solutions

- The correction factors of cooling power and input power take into account the presence of glycol and diverse evaporation temperatures.
- The pressure drop correction factor considers the different flow rate resulting from the application of the water flow rate correction factor.
- The water flow rate correction factor is calculated to keep the same  $\Delta t$  that would be present with the absence of glycol.

### **i** NOTE

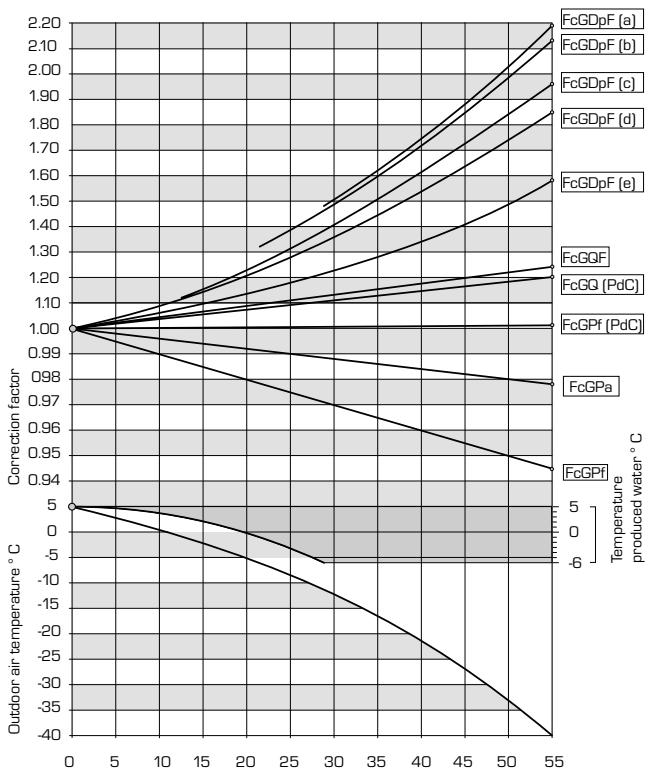
On the following page an example is given to help graph reading.

To determine the percentage of glycol required, see below diagram; this percentage calculation can take into consideration one of the following factors: Depending on which fluid is considered (water or air), the graph is interpreted by the right or left side at the crossing point on the curves with the external temperature line or the water produced line. A point from which the vertical line will pass is obtained and this will distinguish both glycol percentage and relative correction coefficients.

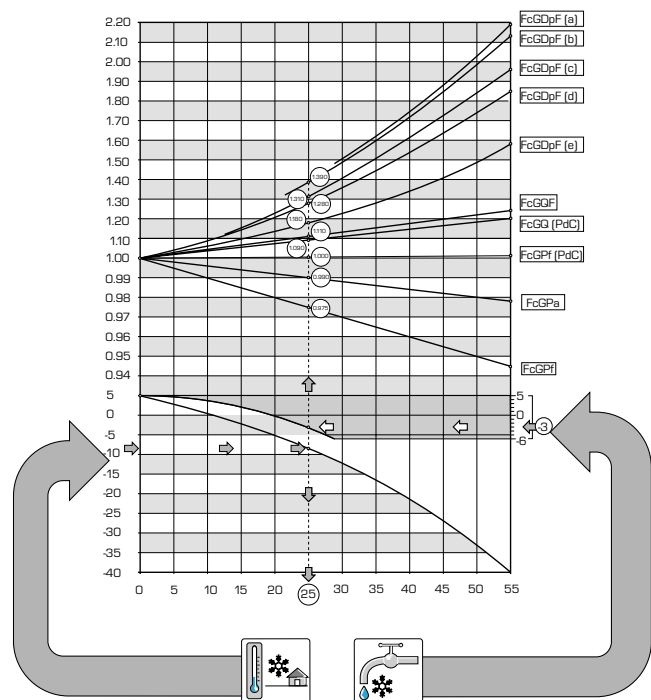
### 13.1 How to read the glycol curves

The curves shown in the diagram summarise a significant number of data, each of which is represented by a specific curve. In order to use these curves correctly it is first necessary to make some initial reflections:

- If you wish to calculate the percentage of glycol on the basis of the external air temperature, enter from the left axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the glycol percentage value recommended to produce desired water temperature is on the lower axis.
- If you wish to calculate the percentage of glycol on the basis of the temperature of the water produced, enter from the right axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the glycol percentage value recommended to produce water at the desired temperature nominal of the size in question; while the lower axis recommends the glycol percentage value necessary to produce water at the desired temperature.



Initial rates for “EXTERNAL AIR TEMPERATURE” and “TEMPERATURE OF PRODUCED WATER”, are not directly related, therefore it is not possible to refer to the curve of one of these rates to obtain corresponding point on the curve of the other rate.



### Key:

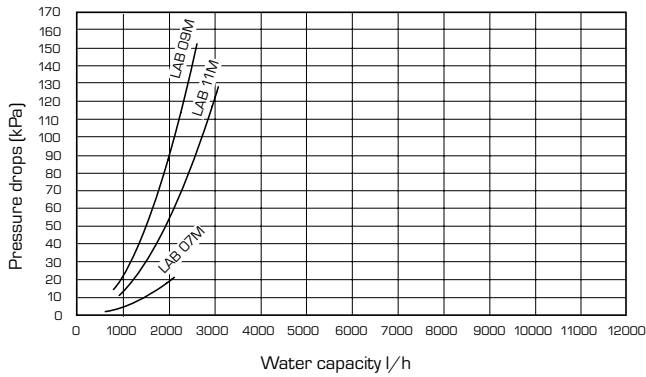
- FcGPf Corrective factors for cooling capacity
- FcGPa Corrective factors of the input power
- FcGDpF (a): Corrective factors for pressure drop (evaporator) (av. temp. = 3.5 °C)
- FcGDpF (b): Corrective factors for pressure drop (av. temp. = 0.5 °C)
- FcGDpF (c): Corrective factors for pressure drop (av. temp. = 5.5 °C)
- FcGDpF (d): Corrective factors for pressure drop (av. temp. = 9.5 °C)
- FcGDpF (e): Corrective factors for pressure drop (av. temp. = 47.5 °C)
- FcGGF Corrective factors for flow rates (evap.) (av. temp. = 9.5 °C)
- FcGQC Corrective factors for flow rates (condenser) (av. temp. = 47.5 °C)

### **i** NOTE

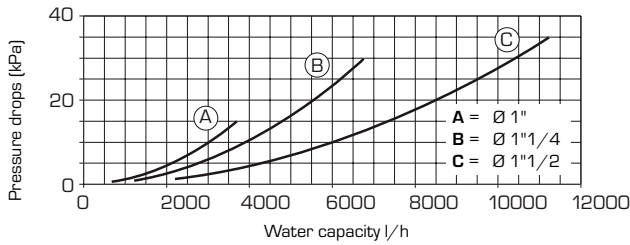
Although graph shows up to external air temperature of -40°C, unit operational limits must be considered.

# 14 Pressure drops

## 14.1 Pressure drops in heating functioning mode



## 14.2 Pressure drops (filter)



Model	LAB 07M	LAB 09M	LAB 11M
Ø Filter	1"	1"	1"

## 15 Sound data

### Sound power

Dimplex determines sound power values in agreement with 9614 standard, in compliance with that requested by Eurovent certification.

### Sound Pressure

The Sound pressure is measured in free field conditions at 10m from unit, in compliance with ISO 3744 regulations.

## 15.1 Functioning in cooling mode

### Base version LAB (unit without water)

LAB	Total sound levels			Octave band (Hz)						
	Power	side		125	250	500	1000	2000	4000	8000
	dB (A)	1m dB (A)	10m dB (A)	Sound potential for band dB (A) frequency						
07M	61	45	33	70	64.1	59.1	52.7	46.7	41	35.7
09M	68	52	40	80.2	68.5	61.8	61.8	55	49.1	45.1
11M	65	49	37	68	65.1	60.2	60.2	53.2	47.4	44.8

Inlet water temperature            12 °C

Outlet water temperature        7 °C

External temperature            35 °C

## 16 Calibration of safety and control parameters

### 16.1 Control parameters

		Min.	Standard	Max.
Setting domestic hot water temperature	°C	25	46	55
Differential thermostat in heating mode	°C	0.3	2	19.9
Calibration of the cooling water temperature	°C	7	11	25
Differential thermostat in cooling mode	°C	0.3	2	19.9

### 16.2 Protection device calibration

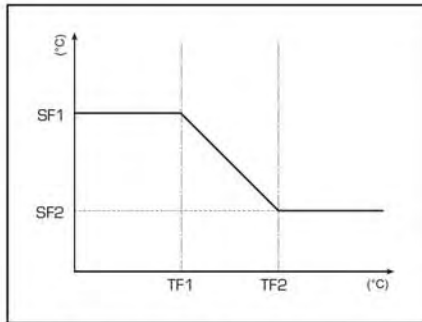
		LAB 07M	LAB 09M	LAB 11M
Auxiliary/fan magnet circuit breaker	A	2	2	4
Compressor magnet circuit breaker	A	230 V	16	20
		400 V	8	10
High pressure pressure switch	bar	28	28	28
Low pressure pressure switch	bar	1	1	1

## 17 Control logic for the compensation set-point

THE ANR UNITS HAVE AN OUTSIDE AIR TEMPERATURE COMPENSATION FUNCTION.

THIS OPTION MODIFIES THE SETPOINT TO WORK ON THE BASIS OF THE OUTSIDE AIR.

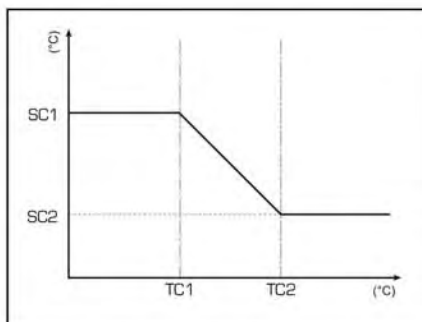
TEMPERATURE ACTING ON SOME SETPOINTS SET IN THE UNIT.



During cooling function, the work set is calculated automatically, the logic by which this calculation happens is the following:

- One sets the minimum value (Cooling set 2) and the maximum (Cooling set 1) at which you want the machine to work
- One sets the external temperature at which one wants the unit to reach in regards to the maximum set (TAE 1) and the minimum set (TAE 2)

In this way, the unit is able to measure the temperature of the external air, and on the basis of this, decide which value to give to the cooling work set.



During „heating“ operation, the work set is calculated automatically, the logic by which this calculation happens is as follows:

- Set a minimum value (Heating set 2) and a maximum (Heating set 1) at which you want to have the machine work
- Set an external temperature at which you want the unit to reach, respectively, the maximum set (TAE 1) and the minimum set (TAE 2)

In this way, the unit is able to measure the temperature of the external air, and on the basis of this, decide which value to give to the heating work set.

## 18 Maintenance

### **i** NOTE

All routine and extraordinary maintenance operations must be carried out exclusively by qualified staff. Before starting any servicing operation or cleaning, be sure to disconnect the power supply to the unit.

All appliances are subject to inevitable wear and tear over time. Maintenance makes it possible to maintain the efficiency of the unit

- Reduce the speed of deterioration.
- Gather information and data and understand the condition of efficiency of the unit in order to prevent breakdowns.

It is therefore essential to carry out periodic controls:

- YEARLY
- SPECIAL CASES

Keep a maintenance log on the machine (not supplied with the unit, the user must provide for one) that enables you to keep track of the servicing carried out on the unit. This makes it easy to organise the work appropriately and facilitates troubleshooting on the machine. In the log, record the date, type of work carried out (routine maintenance, inspection, or repair), a description of the work, any measures taken, and so on...

### Yearly check

Cooling circuit

- Verify the watertightness of the cooling circuit, and that the pipes have not been damaged.
- Perform an acidity test on the cooling circuit oil.
- Verify the operation of the high and low pressure pressure switches; in the event of poor operation, replace the switches
- Check the state of deposits on the dehydrator filter; if incrustated, replace the filter.

### Electrical checks

- Check the condition of the electrical wires and their insulation.
- Verify the operation of the resistance of the evaporator and, if present, of the compressor sump.

### Mechanical checks

- Check the tightness of the screws on the fan grilles and on the fan bodies, the compressors and the electrical box, as well as the exterior panelling of the unit. Insufficient fastening can lead to undesired noise and vibrations
- Check the condition of the structure. If there are any oxidised parts, treat with paint suitable to eliminate or reduce oxidation.

### Hydraulic controls

- Clean the water filter.
- Bleed the air from the circuit.
- Verify that the water flow rate to the evaporator is constant.
- Verify the thermal insulation of the hydraulic piping.
- Check the percentage of glycol where necessary.

### Cleanliness of the external heat exchanger

There are no specific requirements for the cleanliness of the external heat exchanger, other than ensuring that debris is removed to ensure adequate air flow. Periodically it may be necessary to wash the heat exchanger with clean water and a soft brush. The heat exchanger should not be pressure washed or cleaned with abrasive chemicals other than those specifically designed for this task.

## 19 Disposal

### 19.1 Disconnecting the unit

The operations for disconnecting the unit must be carried out by a qualified technician. Before disconnecting the unit, the following must be recovered, if present:

- The refrigerant gas: the gas must be extracted using suction devices operating in a closed circuit to ensure there are no gas leaks into the environment.
- The glycol must not be dispersed in the environment when removed, but stored in suitable containers.

#### **i** NOTE

The disposal of the gas refrigerant, the glycol water where present, and the recovery of any other material or substance must be carried out by qualified staff in compliance with the specific regulations in force to prevent injury/damage to persons/objects as well as the pollution of the surrounding area.

The unit can be stored in the open while awaiting demolition as long as bad weather and temperature changes do not cause damaging effects to the environment and the electric, cooling and hydraulic circuits are integral and closed.

### 19.2 Dismantling and disposal

In the dismantling stage, the fan, the motor and the coil, if operational, can be recovered by specialised recycling centres.

#### **i** NOTE

For dismantling/disposal, all the materials must be taken to the authorised facilities in compliance with the national regulations in force on this subject. For further information on disposal, contact the head office.

## 20 Improper use

The appliance is designed and constructed to guarantee the maximum safety in its immediate vicinity (IP24), as well as to resist atmospheric agents. The fans are protected from involuntary intrusion by means of protective grids. Accidental opening of the electric control board with the machine in operation is prevented by the door-blocking isolator switch. Avoid laying tools or heavy objects directly on the lateral heat exchange coils, in order not to damage the louvers.

#### **i** NOTE

Do not insert or drop objects through the fan motor grids. Do not rest on the "Sharp surfaces" of the heat exchange coils.

### 20.1 Important safety information

The machine must not exceed the pressure and temperature limits indicated in the table shown in the "Functioning limits" paragraph in the technical manual. Correct operation of the unit is not guaranteed following a fire; before restarting the machine, have it checked by an authorised service centre. The machine is equipped with safety valves which, in the event of excessive pressure, can discharge the high temperature gas into the atmosphere. Wind, earthquakes, and other natural phenomena of exceptional intensity have not been considered. If the unit is used in an aggressive atmosphere or with aggressive water, please consult the head office.

**Following extraordinary maintenance work on the cooling circuit involving the replacement of components, before restarting the machine, carry out the following operations:**

- Pay maximum attention in restoring the load of refrigerant indicated on the machine plate (inside the electric control board).
- Open all the cocks present in the cooling circuit.
- Connect the electrical power supply and earth correctly.
- Check the hydraulic connections.
- Check that the water pump is working correctly.
- Clean the water filters.
- Check that the condenser coils are not soiled or clogged.
- Verify the correct rotation of the fan unit.



Danger:  
Voltage



Danger:  
Disconnect power



Danger:  
Moving parts



Danger!!!



Danger:  
Temperature



## 21 Declaration of Conformity



# EG - Konformitätserklärung EC Declaration of Conformity Déclaration de conformité CE



Der Unterzeichnete  
The undersigned  
La société soussignée,

**Glen Dimplex Deutschland GmbH**  
**Geschäftsbereich Dimplex**  
**Am Goldenen Feld 18**  
**D - 95326 Kulmbach**

bestätigt, dass das (die) nachfolgend be-  
zeichnete(n) Gerät(e) aufgrund seiner (ihrer)  
Konzipierung und Bauart sowie in der von  
uns in Verkehr gebrachten Ausführung den  
einschlägigen grundlegenden Anforderungen  
der EG-Richtlinien entspricht (entsprechen).

Bei einer nicht mit uns abgestimmten  
Änderung des (der) Gerät(e)s verliert  
diese Erklärung ihre Gültigkeit.

hereby confirm that the design and con-  
struction of the product(s) listed below,  
in the version(s) placed on the market by  
us, conform to the relevant requirements  
of the applicable EC directives.

This declaration becomes invalidated  
if any modifications are made to  
the product(s) without our prior  
authorisation.

certifie que l'appareil / les appareils ci-  
après, par leur conception et leur mode de  
construction ainsi que par la définition  
technique avec laquelle il(s) sont mis en  
circulation par notre société, est / sont  
conforme(s) aux directives fondamentales  
CEE afférentes.

Ce certificat perd sa validité pour tout  
appareil modifié sans notre consentement.

### Bezeichnung / Designation / Désignation

**Luft/Wasser-Wärmepumpen**  
für Außenaufstellung mit R407C  
**Air-to-water heat pumps**  
for outdoor installation, containing R407C  
**Pompes à chaleur air/eau**  
pour installation extérieure avec R407C

### EG - Richtlinien / EC Directives / Directives CEE

EG-Niederspannungsrichtlinie / EC Low Voltage Directive /  
Directive CEE relative à la basse tension (2006/95/EG)  
EG-EMV-Richtlinie / EC EMC Directive / Directive CEE  
relative à la compatibilité électromagnétique (2004/108/EG)  
Druckgeräterichtlinie / Pressure Equipment Directive /  
Directive CEE relative aux appareils sous pression (97/23/EG)

### Typ(e): Harmonisierte EN / Harmonized EB Standards / Normes EN harmonisées:

**LAB07M** EN 255 / EN 14511  
**LAB09M** EN 378  
**LAB11M**  
EN 60335-1:2002+A11+A1+A12+Corr :+A2:2006  
EN 60335-2-40:2003+A11+A12+A1+Corr.:2006  
EN 55014-1:2006  
EN 55014-2:1997+A1:2001  
EN 61000-3-2:2006  
EN 61000-3-3:1995+A1:2001+A2:2005

Kulmbach, 05.10.2009  
CE\_LAB07-11M.doc



Clemens Dereschkewitz  
Geschäftsführer/Managing Director



Mathias Huprich  
Produktionsleiter/Production Manager

